DOCUMENT RESUME

ED 293 450 HE 021 363

TITLE Comprehensive Health Professions Plan Review for Florida. Report 6. Report and Recommendations of the Postsecondary Education Planning Commission, 1988.

INSTITUTION Florida State Postsecondary Education Planning Commission, Tallahassee.

PUB DATE 25 Feb 88

NOTE 85p.; Prepared in response to Specific Appropriation 537 of the 1987 General Appropriations Act (Chapter 87-98, Laws of Florida).

PUB TYPE Reports - Evaluative/Feasibility (142)

EDRS PRICE MF01/PC04 Plus Postage.

DESCRIPTORS *Allied Health Occupations Education; Allied Health Personnel; Dental Students; Dentistry; Educational Assessment; Geriatrics; Higher Education; *Master Plans; *Medical Education; Minority Groups; Needs Assessment; Nursing Education; Pharmaceutical Education; Policy; *Program Evaluation; Public Health; State Surveys; *Statewide Planning; Veterinary Medical Education

IDENTIFIERS Chiropractic Profession; *Florida

ABSTRACT

The status of Florida health professions education is reviewed in this commission report, which provides information on enrollment and graduate levels, market place demand for graduates and new policy issues. After an introduction that summarizes the commission charge, commission activities, purpose and scope, background, health professions education, and manpower, specific fields are considered: nursing education (registered nursing and licensed practical nursing); public health; dental education (dentistry and dental hygiene); chiropractic education; medical education (allopathic and osteopathic physicians and physician assistants); allied health; pharmacy education; and veterinary education. Major issues and recommendations are discussed regarding health professions manpower, health professions education programs, minority participation in health professions education, geriatrics in health professions education, and cost containment in health professions education. 29 tables. (SM)

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COMPREHENSIVE HEALTH PROFESSIONS PLAN REVIEW FOR FLORIDA

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HE 021 363

Report and Recommendations of the Postsecondary Education Planning Commission

1988 - REPORT 6

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POSTSECONDARY EDUCATION PLANNING COMMISSION

COMPREHENSIVE HEALTH PROFESSIONS PLAN REVIEW FOR FLORIDA

Prepared in Response to
Specific Appropriation 537
of the
1987 General Appropriations Act
(Chapter 87-98, Laws of Florida)

1988 - Report 6

February 25, 1988

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EXECUTIVE SUMMARY

Through proviso language accompanying Appropriations Item 369, (Chapter 82-215, L.F.) the 1982 Legislature directed the Postsecondary Education Planning Commission to "develop a comprehensive health professions education plan for the State." The subsequent Health Professions Report (1983) called for an analysis of types of programs needed, geographical locations of these programs, settings in which such education should occur, and funding and tuition policies. In addition, a process to obtain reliable State health manpower information was outlined.

In the interim since the 1983 report, eight professions have been studied individually and reports submitted to the Legislature. These included Nursing (1983), Public Health (1983), Dentistry (1984), Chiropractic Education (1984), Medical Education (1985), Allied Health (1986), Pharmacy (1987), and Veterinary Medicine (1987). More recently, through proviso language for Specific Appropriation 537, in the 1987 General Appropriations Act (Chapter 87-98, L.F.) the Legislature charged the Commission to "continue to prepare a review of the status of all health professions education programs included in the Comprehensive Health Professions Education Plan and provide current information on enrollment and graduate levels, a review of market place demand for graduates, and an analysis of new policy issues and the disposition of former recommendations."

The Chairman of the Postsecondary Education Planning Commission appointed Commission members Dr. Michael Butler, Dr. Alan Fickett, and Mrs. Carolyn Wilson to serve on the Comprehensive Health Professions Education Committee. During the course of its deliberations, four public hearings were held between November 1987 and February 1988 in Tampa, Tallahassee, Orlando, and St. Augustine to receive testimony and to discuss drafts of the Comprehensive Health Professions Education Review. Public testimony was received from representatives of the three governing and coordinating boards for Florida public higher education, the University of Florida College of Dentistry, and the Department of Health and Rehabilitative Services. Drafts of the study were widely disseminated, and responses to draft materials were received from deans and directors of programs in Public Health, Allopathic and Osteopathic Medicine, Veterinary Medicine, Pharmacy, Nursing, Allied Health, and Dentistry. Individuals from public and private agencies, professional organizations, health industry organizations, and other interested parties also responded to draft materials. In preparing background materials, staff conducted site visits to the College of Dentistry in Gainesville and the Project in Medical Sciences on the Florida State University campus. Information was also gathered and analyzed on existing programs in each of the eight professions and on national and state manpower data. Staff interviewed deans and directors of programs from each of the eight health professions studied and consulted numerous individuals in various State agencies, educational governing and coordinating boards, professional associations, health industry organizations, and others.

Education for health professions in Florida must be viewed within the context of a highly dynamic and complex health care industry. Health education is multifaceted and complicated by such concerns as emerging oversupplies of some

health professionals and undersupplies of others, a growing cohort of elderly individuals in the general population, increasing numbers of HMO insurance plans, restructured health insurance benefits, new technologies, cost containment, a more limited federal role, and concern over transmission of diseases, specifically AIDS. Changes occurring in the health care industry nationally are often magnified by the unique demographic characteristics of the State. Florida's diverse and rapidly growing population presents a tremendous challenge to the State's health care industry, educators of health professionals, and health care policy makers. Five major issues identified in the review of individual health professions are synthesized in the following paragraphs.

A. Health Professions Manpower

Manpower supply and demand was an issue of primary concern in this update. When examined across the eight major categories of health professions education areas, the current overall manpower situation is best described as in balance. This generality, however, masks specific manpower strengths and weaknesses in individual programs. Manpower supply and demand information indicates that current and projected State needs can adequately be met for dentists, chiropractors, physicians (with the exception of some specialty areas), pharmacists, and veterinarians. Data suggest that the manpower situation for most public and allied health occupations is in tenuous balance, but large increases in demand are projected for services rendered by these health professionals. This scenario, coupled with uneven supplies of graduates for some of these occupations, suggests that public and allied health occupational areas will have difficulty meeting future needs. Finally, the State is experiencing a severe undersupply of registered nurses--a situation that is expected to worsen by the turn of the century if the supply of RNs does not increase appreciably. The demand for most health care services in Florida will continue to escalate, accompanied by special needs of population subgroups. While projections indicate that some health professions education programs will produce sufficient numbers of graduates to meet demand over the next ten years, for other professions, supply is just meeting demand. The future, then, will find the State with a deficit situation where the demand for services cannot be adequately met.

Any discussion of Florida manpower for the health professions is restricted by inadequate manpower information. Major limitations exist in the quality and quantity of Florida health manpower data. Individual manpower supply and demand analyses in the previous chapters show the unevenness of information, particularly for current demand and projections of both supply and demand. Some of the manpower information utilized here is based on documentation; other reports rely on expert opinion and perceptions. Data collected through the Department of Health and Rehabilitative Services surveys of licensed professional and manpower projections prepared by the University of Florida have significantly contributed to the knowledge base on health manpower, yet the larger problem of inadequate information persists.

There is critical need for a comprehensive manpower data base which incorporates, at a minimum, regular surveys of all of the health professions studied in this report. Additionally, the State, through the Department of Health and Rehabilitative Services, should give priority to conducting

ongoing manpower supply and demand projections for these health professions individually, on a rotating basis, so that approximately every five years revised projections are produced. As the designated state-level advisory group on health policy issues, the Statewide Health Council should assist in bringing together representatives from education, government, and industry to discuss issues related to labor market needs and to coordinate efforts towards helping the educational sectors respond to State needs for the health professions. Substantive planning for health professions education by the State's postsecondary education institutions and governing and coordinating boards is dependent on the availability of accurate, complete, and timely data on both current and projected Florida health manpower needs.

Recommendations:

1. **The State, through the Department of Health and Rehabilitative Services, should support ongoing labor market supply and demand projections for all major health professions.**

2. **The Statewide Health Council should coordinate a statewide planning group with representation from education, government, and industry to discuss labor market issues relating to the health professions and to assist educational sectors in responding to State needs for these professions.**

B. Health Professions Education Programs

Educational preparation for the eight health professions is generally accessible, both geographically and economically. Programs within each of the professions tend to be located in both rural and urban areas and are often available in both public and private postsecondary institutions. State tuition subsidies for Florida residents in private institutions exist for some programs to enhance access. Also, many programs have established extension and outreach activities to further increase accessibility. With the exception of chiropractic education, students may select, where appropriate for each profession, programs at certificate, associate degree, baccalaureate degree, and master's degree levels. Doctoral degree preparation is available for many health professions.

The status of annual program enrollments and degrees awarded is generally stable. In dentistry, some allied health and public health programs, the number of qualified applicants exceeds the space available, producing a favorable applicant-to-enrollee ratio for the institution. In other cases, programs are experiencing a decline in applications and a reduction in the number of qualified students. At some institutions, programs in nursing, dental hygiene, and allied health fields such as medical laboratory technology are in enrollment declines. Data on program completions indicate that the number of degrees awarded annually in most of the health professions remained constant during the first half of this decade. A notable upsurge occurred, however, in the number of graduate degrees in nursing and public health degrees awarded, while a decline was evident in the number of undergraduate nursing degrees granted.

The condition of annual stable-to-declining enrollments and degrees awarded that currently characterizes most of the eight health professions is of particular concern to the Commission as enrollments and degrees granted directly affect manpower supply. Most health program deans and directors report increased efforts to attract and retain students in health professions education through various initiatives.

Recommendation:

3. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should continue to carefully monitor enrollments and degree completions in health professions education programs. Program quality must be maintained while providing sufficient numbers of graduates to meet the State's future health personnel needs.**

C. Minority Participation in Health Professions Education

For purposes of this report, the issue of minority participation focuses on enrollment and graduation rates of males, females, blacks and Hispanics. Representation by gender is concerned with the traditional male/female distribution among enrollees and graduates. Whereas females have registered significant gains in participation in traditionally male-dominated professions, the representation of males in traditionally female-dominated professions has not increased appreciably. In 1980, the State's population was composed of 85.4 percent whites, 13.8 percent blacks, and 8.8 percent Spanish origin individuals. In few of the health professions programs studied for this report were blacks and Hispanics represented at the level they have been in the general population. Additionally, the participation rates of blacks have declined in most health professions programs. The participation rates of Hispanics generally increased slightly.

In other reports, the Commission has examined in detail the progression of minorities in Florida postsecondary education. The Commission's Master Plan for Florida Postsecondary Education: 1988 Update reports that enrollment levels in public higher education for blacks in Florida have declined since the latter part of the 1970s, with the declines occurring primarily in the community college sector. Recommendations in the update call for increased support for initiatives designed to enhance the participation, retention, and completion of underrepresented groups, particularly racial/ethnic minorities. The enrollment and completion data reviewed for the Comprehensive Health Professions Education Plan accentuate the need to reinforce efforts to increase minority participation in all health professions programs. Cooperative inter-institutional programs provide alternatives to increase participation. In addition to the issue of equity, the importance of increasing minority participation relates to the need to improve the health of minority citizens as well as of rural and inner city residents. The incidence of disease is higher among minority groups, the poor, and rural residents than it is in the general population.

Recommendation:

4. **The State should continue to support initiatives to enhance minority participation in health professions education. Governing and coordinating boards for public postsecondary education should carefully monitor these recruitment and retention programs to assess their effects on the progress of racial/ethnic minorities from enrollment to graduation.**

D. Geriatrics in Health Professions Education

The growing cohort of individuals 65 years of age and over in Florida is a major issue in health professions education. The median age of Florida's population was 34.7 years in 1985, compared with the national median of 30 years. Also in 1985, persons 65 and older accounted for 18.5 percent of the State's population; this is expected to increase to 20.6 percent by the turn of the century. The elderly are the heaviest users of health services.

A number of past recommendations within individual health professions studies focused on the inclusion of geriatrics in the curricula. Interviews with deans and directors of programs in nursing, medicine, public health, dentistry, pharmacy, and allied health confirmed that geriatrics has been incorporated into the curricula of these programs through both theory and practice. The issue of special needs of the elderly are addressed through specific, separate courses as well as through discussions in a variety of courses. Clinical requirements for most health professions programs incorporate experience with elderly patients in diverse health care settings. In addition, graduate programs in medicine, dentistry, and pharmacy conduct geriatric research. In sum, it appears that geriatrics has become an integral part of health professions education; however, the breadth and depth of the geriatric component varies across and within the professions.

Recommendation:

5. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should use the program review process to identify how and to what extent geriatrics is integrated into the health professions curricula in public postsecondary institutions in order to determine if students are receiving adequate exposure to the health needs of the elderly.**

E. Cost Containment in Health Professions Education

The issue of cost containment in health professions education has two aspects. One is the cost of providing health professions programs in the institution; the other is the inclusion of cost containment concepts in the curriculum.

The cost to the institution of providing health professions programs is high as they are expensive to initiate and maintain. Since 1980, total federal spending for health professions education has declined sharply, and postsecondary institutions have become increasingly reliant on income generated through patient-care services and student tuition. Concern over

program costs has led most institutions to reexamine their offerings and options. The very successful joint Master's in Public Health program between Florida International University and the University of Miami may serve as a model for other health professions programs as a cost effective alternative.

Cost containment is also a necessary element in health education curricula. Indicators of spiraling health care costs in the United States include the rapid increase of health care costs over the consumer price index; the increase of insurance costs over any other health care item; and rising hospital and room rates as well as physician fees. At the same time, efforts are needed to avoid erosion in the quality of health care in the name of cost containment. Since health professionals at many levels and in various fields influence health care costs, the inclusion of information on cost containment issues in the curricula should contribute to the avoidance of unnecessary costs while maintaining quality services.

Recommendation:

6. **Institutions should explore the feasibility of developing joint programs in health professions education, particularly at the graduate level, as a cost containment strategy to confront enrollment declines and maintain program accessibility.**

7. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should use the program review process to determine the extent to which cost containment is incorporated into the health professions curricula and to assess the adequacy of this coverage.**

F. Summary

While there are a number of issues relevant to health professions education in Florida, concerns with manpower, programs, minority participation, geriatrics, and cost containment are of particular import to the State. It is the Commission's belief that the citizens of Florida are well served in health professions education programs in regards to access and quality. Florida colleges and universities have made a good faith effort to address concerns raised in earlier studies on the eight professions. As a result of the Commission's attention to these and related issues, there are assurances from educators, administrators, industry, and government of continued dialogue and collaboration to develop appropriate policy guidelines for health professions education.

I. INTRODUCTION

A. Commission Charge

Through proviso language accompanying Appropriations Item 369, (Chapter 82-215, L.F.) the 1982 Legislature directed the Postsecondary Education Planning Commission to "develop a comprehensive health professions education plan for the State." The subsequent Health Professions Report (1983) called for an analysis of types of programs needed, geographical locations of these programs, settings in which such education should occur, and funding and tuition policies. In addition, a process to obtain reliable State health manpower information was outlined.

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B. Commission Activities

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C. Purpose and Scope

As stipulated in proviso language, the purpose of this update is to review the current status of the health professions education programs identified in the 1983 Comprehensive Health Professions Education Plan. The review contains information on enrollments and completions, manpower, new policy issues, and the status of previous recommendations. The health professions programs reviewed include Nursing (1983), Public Health (1983), Dentistry (1984), Chiropractic Education (1984), Medical Education (1985), Allied Health (1986), Pharmacy (1987), and Veterinary Medicine (1987). Following this introductory chapter, each of the health professions is discussed separately. Common to each is a brief description of programs and sites, enrollment and completion data, manpower concerns, and a synthesis of selected past recommendations and actions taken.

The goal of this update is not to provide an in-depth examination of each profession, but rather to focus on specific areas of central interest in policy development. As an update on reports prepared between 1983 and 1987, discussion of some professions will reflect more comment than that of others based on comparisons made between the original reports and information and observations included in this document.

D. Background

Health care is the nation's third largest industry in terms of gross employment, with roughly eight million people employed and encompassing a wide range of professionals. In Florida the general public and the health care industry are currently served by a wide variety of postsecondary programs leading to certificates, diplomas and degrees at the associate, baccalaureate, and post-baccalaureate levels. Additionally, geographic access is enhanced through the availability of programs at different institutions across the State.

Like all dynamic professions, health care is under constant pressure to respond to the social, economic, technological, and political environment. Each stimulates corresponding changes and adaptations in the industry.

The State's population in 1985 was estimated at about 11.4 million and is projected to reach 15.2 million by the year 2000. Rapid growth in the overall population and specifically in the older cohort has made Florida the state with the largest proportion of residents age 65-plus, constituting nearly one-fifth of our population. Individuals over the age of 65 dominate the population of central Florida and affect county health service needs through a greater demand for health care services than do other age groups.

A second major subset of the total population has little or no health insurance and insufficient resources to pay for essential health care. Individuals in this group, the medically indigent, have family incomes below 150 percent of the federal poverty level. A report by the Florida Department of Health and Rehabilitative Services reveals that in 1985 more than four million Floridians qualified as medically indigent, and access to health care for them has become a major public problem.

Finally, the culturally and linguistically diverse population places greater stress on the State's health care system and the role of health professionals prepared to work effectively with the special needs of this group. For example, the number of limited English proficient adults in the State is estimated at approximately 388,000; in the 1986-87 academic year in the public K-12 system, there were over 37,000 school children whose primary or home language was not English. While 80 percent of the adults and 74 percent of the children identify Spanish as their first language, a recent study of educational services for limited English proficient students in Florida's K-12 system found over 50 different languages listed as first or home languages among children. For example, in the Miami area, there are many immigrants from Haiti and other Caribbean, South and Central American countries. The Florida Health Care Atlas reports that the Hispanic community has had a significant impact on the development of the State's health care system, particularly in the Miami area where the Cuban immigrants have brought a strong orientation to HMO-style prepaid health care.

Economic factors that relate to the health care professions include rising health care costs and constant struggle toward cost containment; the emergence of health maintenance organizations, preferred-provider organizations, and other programs to manage health problems outside the hospital; and restructured health insurance benefits resulting in reduced hospitalization coverage and better outpatient benefits.

The effects of technology are visible in such areas as the increased frequency of transplants; the growing expertise needed by health professionals to work with technological health care aids; and, in areas like medical technology, the increased availability of laboratory tests. Health professionals at all levels and across all fields are finding it increasingly difficult to remain current in their areas.

In the socio-political arena, the role of the federal government in health areas has challenged the health care industry. The prospective payment system implemented by the government to pay for Medicare services is the prime example of policy changes that have affected the entire health care industry. The success of the fixed-payment procedures in lowering Medicare hospital payments for the first time in 20 years has led to speculation that additional measures such as channeling Medicare patients to doctors who order fewer tests and procedures and requiring patients choosing to continue to see the non "approved" doctors to pay a larger share of the bills may be instituted. These measures, too, are expected to have widespread impact on the health profession.

In addition to these general influences, differences in population characteristics in various parts of the State may result in differentiated health care needs. The Department of Health and Rehabilitative Services reports that the majority of Florida residents live south of a line running across the state from Tarpon Springs to Melbourne. This population is heterogeneous, consisting of older white persons, younger Hispanic persons, many resident aliens, and many persons born outside the State. In contrast, the northern areas have a more rural character. This population tends to be native born, has a greater proportion of persons that are medically indigent, and experiences a greater degree of unemployment and underemployment.

Colleges and universities, as providers of health professionals to meet the diverse health needs of the citizens of Florida, must be cognizant of these influences. Manpower needs and postsecondary education programs in all health professions are impacted by such factors as changing hospital utilization patterns, greater numbers of health maintenance organizations (HMOs), fewer physicians practicing independently, shifts in professional options for women and racial/ethnic minorities, and related changes in health care settings.

E. Health Professions Education

Educational preparation for the various health professions in Florida is available in public and independent educational institutions as well as in the proprietary sector and the health care industry. Preparation for employment in health care ranges from on-the-job training to formal academic work in an educational setting. Credentials for employment also vary widely, from no licensure or certification regulations to licensure with mandated continuing education requirements.

While the majority of health professionals educated in the State move through public postsecondary institutions, the overall responsibility for the education of health professionals in Florida is shared with the independent sector. For the most part, students in the State may select from either public or private institutions to pursue their careers in health. In recognition of the important role of independent institutions in providing diversity of educational opportunities for Florida citizens and meeting needs unfulfilled by the state system, funding is provided through educational contracts to support students in programs in private colleges and universities. For example, educational contracts with the University of Miami and Bethune-Cookman College have provided financial support for instruction for Florida residents at state tuition rates in selected health programs. These agreements enhance geographic as well as social access to health professions education.

F. Manpower

The State's public and private systems of higher education provide educational opportunity for all health professions under review for this study with the exception of chiropractic education. Although in recent years Florida has had an adequate supply, in some cases an abundance, of health manpower, the distribution of health professionals is uneven when compared across professions as well as across geographic regions. Health professionals are often concentrated in densely populated urban areas or in coastal communities with attractive living conditions, while rural areas go underserved. The federal government has established health manpower shortage areas to identify those locales deficient in health personnel. Designation as a shortage area results in eligibility to receive a National Health Service Corps assignee. Criteria for determining shortage status may be based on geographic area (by county or portion of a county or counties), subpopulations, or understaffed facilities. The Florida Department of Health and Rehabilitative Services (1986) reports that a number of counties have been designated as shortage areas for one or more health area. The maldistribution of health professionals and consequent lack of health care in certain areas are major concerns in the State's health planning program.

An area of primary concern in this review of the health professions is manpower supply and demand. Supply is examined through enrollment and completion data in the State's postsecondary institutions. Demand is examined through manpower projections. While supply data are usually available from institutional and agency data sources, demand is much more difficult to ascertain and few recent studies on Florida health manpower requirements have been conducted. Nonetheless, the need for current and appropriate manpower information is essential -- particularly for the health professions. A 1987 U.S. Department of Labor report previewing economic and employment projections for the year 2000 predicts that jobs in occupations requiring the most education will grow the fastest, while jobs requiring the least education will grow more slowly or decline. Along these lines, the U.S. Bureau of Labor notes that employment in most health-related occupations is expected to grow faster than their average growth as population growth -- especially growth in the number of older people -- increases the demand for health care.

Supply and demand projections, however, are compromised when considering that the health industry is in the midst of radical transformation, making it difficult to project employment with much certainty. The number of trained health professionals available is affected by various factors; among these are emerging career trends and growing concern with exposure to diseases such as AIDS. A twenty-year study of college freshmen reveals that fewer students in postsecondary education are selecting health professions in general as career goals. Women especially are opting for business; in the health professions, they are increasingly found in schools and colleges of dentistry, medicine, and pharmacy and less in nursing, dental hygiene, and other allied health areas. In addition to a decrease in the pool of prospective students as a result of changing career interests, concern over the risk of contacting communicable diseases such as AIDS through health work has prompted individuals of all ages to consider other professions.

In the chapters that follow, eight health professions are considered separately with subsections on auxiliary personnel. As proviso language specifies, manpower supply and demand information and the status of past recommendations are the concerns of this review and are, therefore, discussed independently for each profession.

II. NURSING EDUCATION

The Commission first studied Nursing Education in 1983. As a result of Legislative action in 1987 directing the Commission to begin a new cycle of the Comprehensive Health Profession Education Plan, Nursing Education is again under study. This chapter synthesizes findings from the current report and examines past recommendations.

Access to nursing education in Florida is available through both public and independent institutions geographically distributed throughout the State. Nursing education encompasses a number of academic preparations. Students may select from programs at the certificate, associate degree, diploma, baccalaureate degree, master's or doctoral degree level to prepare for such careers as nursing assistants, licensed practical nurses, registered nurses, advanced registered nurse practitioners, nurse clinicians, educators and researchers.

Licensure as a registered or a licensed practical nurse is a prerequisite to practice in the nursing profession in Florida. Diploma, associate degree and baccalaureate degree programs prepare individuals for entry into registered nursing. Preparation for licensure as a practical nurse is through a certificate or a diploma. Licensure for nursing practice is dependent on both educational credentials and tests of competence as a registered nurse (RN) or a licensed practical nurse (LPN). Applicants for licensure in Florida must have graduated from a state-approved program. Licensure is obtained by written examination or by endorsement from another state.

A. Registered Nursing

1. Manpower

Nursing supply and demand manpower has been a major issue for a number of years, cycling between surplus and shortage. In most recent years, the supply of nurses has been affected by competitive career alternatives as women have increasingly elected careers in business, science, and other health professions. Job dissatisfaction arising from such factors as salary, extreme pressure in the practice setting, the profession's image, and general working conditions has led many of those in the profession to make a career move into non-nursing fields. The demand for nurses has increased in reaction to conditions in the health care industry, including the prospective payment system, higher patient acuity, and increased need for community care. These are then compounded by Florida's large and demographically diverse population.

Indications point to a current shortage of RNs in the State, as nationally, created by decreasing supplies of RNs coupled with increasing demand for their services. The supply of registered nurses from the State's diploma, associate degree, and generic baccalaureate degree programs generally declined between 1983 and 1986. Concurrently the number of position vacancies in Florida hospitals has increased according to an August 1987 report by the Florida Hospital Association. Home health agencies, public health offices, and other State agencies also report increasing difficulty in filling RN positions. On the demand side, the number of RNs required will continue to increase in

response to the growing needs of the State's population, the impact of the prospective payment system, and the increasing nursing needs of community health care sites and nursing homes.

A nursing manpower report issued by the U.S. Department of Health and Human Services (1986) suggested that the supply of RNs in Florida was expected to exceed demand somewhat; the report pointed out, however, that the state-level projections were only approximate. The report also forecast increased demand for baccalaureate-prepared nurses and a slight decline in need for associate degree and diploma RNs. A less current manpower study performed by the Center for Health Policy Research at the University of Florida also projected a surplus of RNs by the turn of the century. This study was conducted using data from the early 1980's when nursing enrollments and completion rates were high, and it did not take into account the effects of the prospective payment system on nursing demand. It therefore overestimates supply and underestimates manpower requirements for registered nurses.

Only limited reliance can be placed on existing forecasts because of design and data constraints. Current projections do not indicate an undersupply for future demand. Nonetheless, it is difficult to reconcile these projections with the reality of the present nursing labor market and supply trends. On the contrary, there is every reason to believe that a shortage does exist and will worsen if current supply and anticipated demand trends continue.

2. Programs

An individual seeking academic preparation to qualify for licensure as a registered nurse may select from 40 state-approved programs. Opportunities for study leading to a diploma, associate degree, and baccalaureate degree exist within hospital, two-year, four-year, and university settings in public and independent educational systems. Many of the baccalaureate programs offer, in addition to the generic or basic program, a separate yet related track for diploma or associate degree RNs desiring to complete the baccalaureate degree.

Enrollments in programs leading to registered nursing are shown in Table 1 for the years 1983-84 to 1985-86. A steady decline is noted; diploma and associate degree programs reveal larger decreases than baccalaureate programs.

The number of degrees awarded to students in RN programs diminished by 425 or 12.2 percent between 1983-84 and 1985-86 (see Table 2). The greatest number of losses was in associate degree programs. The number of degrees awarded in baccalaureate programs fluctuated by almost 200 annually during the period.

TABLE 1

ENROLLMENTS IN FLORIDA NURSING PROGRAMS
FALL 1983 TO FALL 1985

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983	11,074	190	7,202	3,682
1984	9,763	132	5,894	3,737
1985	8,916	69	5,418	3,429

1 Includes students in generic, Baccalaureate-registered nurse (BRN), and basic Bachelor of Science in Nursing (BSN) programs.

SOURCE: State Board of Community Colleges, Board of Regents, and institutional reports, 1987.

TABLE 2

DEGREES AWARDED FROM NURSING PROGRAMS
1983-84 TO 1985-86

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983-84	3,491	120	2,530	841
1984-85	3,299	92	2,142	1,065
1985-86	3,066	123	2,096	847

1 Includes students in generic, BRN, and basic BSN programs.

SOURCE: State Board of Community Colleges, Board of Regents, and institutional data, 1987.

3. Minority Participation

Male, black, and Hispanic participation in nursing education has become increasingly important as the State's population has diversified culturally and linguistically. To date, Florida nurses are predominantly white Caucasian females; racial/ethnic minorities as well as males are underrepresented in comparison to their proportion of the overall population. Tables 3 and 4 illustrate the proportional representation of males, blacks, and Hispanics in enrollments and degrees awarded from 1983 to 1985. Fewer males enrolled

yearly during the three-year period and numerically fewer received degrees, yet the percentage of diplomas and associate and baccalaureate degrees awarded to males varied by only one-half of one percent.

While fewer blacks enrolled in nursing programs between 1983 and 1985, their share of overall enrollments actually increased by one percent. The number of degrees awarded to blacks fluctuated between 208 and 185. The number of Hispanics enrolled decreased somewhat over the period but their percent of total enrollments also increased by approximately one percentage point. Hispanics earned more degrees in 1985 than in 1983 and this represented a growth of almost two percentage points.

TABLE 3

MINORITY ENROLLMENTS IN FLORIDA NURSING PROGRAMS[1]
1983 TO 1985

		MALE		BLACKS		HISPANICS	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1983	11,074	853	7.7	1,010	9.1	499	4.5
1984	9,763	705	7.2	929	9.5	490	5.0
1985	8,916	640	7.2	897	10.1	480	5.4

1 Includes students in generic, BRN, and basic BSN programs.

SOURCE: Board of Regents, State Board of Community Colleges, and institutional reports, 1987.

TABLE 4

DEGREES AWARDED TO MINORITIES IN FLORIDA NURSING PROGRAMS[1]
1983 TO 1985

		MALE		BLACKS		HISPANICS	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1983	3,491	265	7.6	208	6.0	124	3.6
1984	3,299	227	6.9	185	5.6	147	4.5
1985	3,066	231	7.5	196	6.4	177	5.8

1 Includes students in generic, BRN, and basic BSN programs.

SOURCE: Board of Regents, State Board of Community Colleges, and institutional reports, 1987.

Minority participation in diploma and associate degree and baccalaureate degree programs by enrollment and degrees awarded is detailed in Tables 5 and 6. The decline in male and black enrollments is particularly evident in diploma and associate degree programs. Among Hispanics, decline in enrollments in associate degree programs was counterbalanced by increases in baccalaureate programs. In looking at degree completions, the decline in awards to males and blacks is again apparent in associate degree programs. The number of degrees awarded to Hispanics in associate degree programs was stable but increased among baccalaureate programs.

TABLE 5

ENROLLMENTS IN SELECTED FLORIDA NURSING PROGRAMS BY GENDER AND RACE/ETHNICITY FALL 1983 TO FALL 1985

MALES

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983	853	20	680	153
1984	705	15	516	174
1985	640	5	482	153

BLACKS

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983	1,010	31	622	357
1984	929	32	520	377
1985	897	14	527	356

HISPANICS

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983	499	44	300	155
1984	490	32	248	210
1985	480	18	251	211

[1] Includes students in generic, BRN, and basic BSN programs.

SOURCE: Board of Regents, State Board of Community Colleges, and institutional reports, 1987.

TABLE 6

DEGREES AWARDED IN SELECTED FLORIDA NURSING PROGRAMS
BY GENDER AND RACE/ETHNICITY
FALL 1983-84 TO FALL 1985-86

MALES

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983-84	265	N/A	220	45
1984-85	227	N/A	178	49
1985-86	231	8	182	41

BLACKS

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983-84	208	N/A	144	64
1984-85	185	19	100	66
1985-86	196	15	123	58

HISPANICS

Year	Total	Diploma	Associate Degree	Baccalaureate Degree[1]
1983-84	124	N/A	76	48
1984-85	147	16	71	60
1985-86	177	37	77	63

[1] Includes students in generic, BRN, and basic BSN programs.

SOURCE: Board of Regents, State Board of Community Colleges, and institutional reports, 1987.

In sum, fewer minorities enrolled in 1985 than in 1983, but blacks and Hispanics improved their representation through degree completions. The decline in enrollments, however, is of concern in that a parallel decline in degrees awarded should be expected by the end of this decade.

4. Past Recommendations

Information on the Nursing Profession - The Commission was concerned in 1983 with the inadequacy of information on the demographic and professional characteristics of the nursing workforce and the State's capacity to predict demand. Since the 1983 report, both the level and quality of information on health professionals has improved. The Department of Health and Rehabilitative Services, in particular the Office of Regulation and Health Facilities, has been very responsive to the need for quality data on health professionals on a regular basis. The Department's biennial survey of Florida nurses has been a valuable source of information in developing profiles of registered and licensed practical nurses in the State. In analyzing enrollment and graduation trends, the Florida Board of Regents, the State Board of Community Colleges, the Division of Vocational, Adult, and Community Education, and the State Board of Independent Colleges and Universities, as well as individual institutions, have all provided essential data. Private associations such as the Florida Nursing Association, the Florida Hospital Association, and the Florida Health Care Association have also generously made information accessible.

A major weakness in manpower analyses remains, however, in the lack of studies that attempt to project demand for nurses. The Center for Health Policy Research at the University of Florida has conducted one supply and demand study and the Florida Department of Labor and Job Security's Florida Occupational Information System (FLOIS) offers demand projections for selected occupations. Notwithstanding these contributions, a continuous program of manpower supply and demand studies is essential for nursing education planning.

The Demand for Nursing Professionals - The Commission's 1983 nursing study recommended that expansion of the State's production of new nurses be targeted toward specific goals rather than toward increasing the number of basic RN programs. One identified problem, the shortage of specialty nurses such as intensive-care and cardiac-care nurses, has continued. The recent survey by the Florida Hospital Association found that hospitals had difficulty recruiting nurses for intensive care and critical care, emergency and operating rooms, and medical surgical staffs. One effort to address the critical care specialty need has been implemented at Miami-Dade Community College in conjunction with Baptist Hospital of Miami. Focusing on new graduates and experienced nurses, an eight-week program provides both the theoretical background and clinical experience necessary for RNs to move into critical care nursing. For employees and employee-candidates, the hospital awards tuition subsidies and other financial assistance.

A second specific need identified by the Commission was to increase the number of master's prepared nurses. Considerable growth has occurred in graduate level nursing programs since 1983. Between 1983 and 1986, the number of programs increased from three to five, and enrollments in the State's five master's programs increased by 70 percent, from 341 to 581. The number of degrees awarded grew four-fold, from 36 to 152 between 1984 and 1987, partially as a result of the establishment of new programs in recent years. An additional MSN program is under consideration for Florida Atlantic University to help meet the needs of the southeast Florida area.

The Career Ladder in Nursing - In a continuing effort to enhance articulation in nursing and promote access to higher-level programs, the Commission recommended that the existing state-level Articulation Coordination Committee establish a nursing articulation subcommittee with the goal of creating an articulation agreement between Florida public school districts, community colleges, and universities. A Nursing Coordination Task Force was appointed in 1984 and developed one articulation plan for diploma, associate, and baccalaureate levels and another for licensed practical nursing and associate degree levels. The Task Force report noted that specificity was achieved at the diploma and associate degree to baccalaureate level because college-level work was taken by matriculating students; specificity could not be developed at the LPN to ADN level since college-level work was not always involved.

At the local level, a few individual institutions and programs have developed highly successful articulation agreements for LPNs moving into associate degree programs and for associate degree and diploma RNs making a transition to baccalaureate programs. Although much has been accomplished in education to promote articulation and provide career ladder alternatives for upward mobility for nurses, efforts must be made to forge new agreements and to strengthen present ones. The threatened crisis in the supply of nursing personnel emphasizes the need for cooperation and constructive discussion among nurse educators and employers to enhance the movement of nurses within educational programs.

Entry to Practice - It was the Commission's opinion in 1983 that the existing educational requirements for licensure of LPNs and RNs in Florida not be changed. As was true at the time of the earlier study, there is no indication at present that nurses with diploma and ADN preparations have performed unsatisfactorily as registered nurses.

Nursing Education and the Nursing Practice - At the time of the 1983 study, concern was expressed about the interaction between nursing educators and nursing practice personnel. While not all differences have been resolved between educators and practitioners, it appears that both the quality and quantity of discussion have improved through joint meetings and exchange of information. Recent developments in the availability of nurses at employment sites have brought nursing educators, administrators, and practitioners together in constructive dialog. Also, in 1985 the deans and directors of baccalaureate and higher degree programs in the State developed baccalaureate degree nursing education competencies for entry into practice. According to the report, the competencies are to enumerate the skills, abilities, and knowledge graduates from baccalaureate programs in Florida will possess and to communicate this information to employers and the public as well.

B. Licensed Practical Nursing

1. Manpower

In 1986, the Department of Professional Regulation reported 35,225 licensed active licensed practical nurses (LPNs) in the State. Results of a 1985 survey of nurses by the Florida Department of Health and Rehabilitative Services found that among respondents, 50 percent were located in hospital

settings and 19 percent were in nursing homes. Other employment sites included home health agencies, patients' homes, and physicians' offices.

As with the registered nurse population, the supply of LPNs is contingent upon the number of graduates from academic programs and new licenses granted as well as upon in-migration, retirement, death, and other factors. According to information from the Florida Board of Nursing, the number of new licenses granted to LPNs decreased steadily between 1982-83 and 1986-87 from 4,664 to 3,500 or by 25 percent. In the State's LPN programs located in public community colleges, private institutions, and vocational/technical centers, enrollments declined by 28 percent between 1982-83 and 1985-86, and the number of completions from these programs dropped from 2,077 to 1,445 or 30 percent.

Unlike the situation for RNs, the demand for LPNs and the ability to meet that demand do not appear to be problematic. Projections from the Florida Occupational Information System forecasts 2,400 average annual openings for LPNs, yet 3,500 new LPN licenses were granted in 1986-87. Among respondents to the 1985 HRS survey of LPNs, 14 percent or 3,711 were unemployed and of these, 63 percent were not seeking employment. The Florida Hospital Association survey of August, 1987 revealed a full-time-equivalent vacancy rate of 6.1 percent, compared to over 13 percent for RNs. The 1986 U.S. Department of Health and Human Services report on licensed practical nurses projects a large oversupply by the year 2000. The University of Florida's Center for Health Policy Research manpower study also indicated a surplus condition, but suggested that the amount of surplus would be cut in half by the year 2005. Overall, projections indicate an excess of LPNs between 1990 and 2000. It is not clear, however, what effect the current shortage of registered nurses will have on the utilization patterns and demand for LPNs in the future.

2. Programs

The Florida Board of Nursing reported 34 approved programs of practical nursing in 1986. The majority of these (22) are located in vocational-technical centers or high schools, ten are in public community/junior colleges, and two are in independent hospital facilities. The total number of LPN programs in the State has remained relatively constant during the past ten years. Enrollments as reflected in Table 7 have decreased steadily, and the number of completions (Table 8) declined by approximately 25 percent during the four-year period.

TABLE 7

ENROLLMENTS IN FLORIDA LICENSED PRACTICAL NURSING PROGRAMS
1982-83 TO 1985-86

Year	Enrollments	Community Colleges	Independents	DVACE
1982-83	5,240	993	80	4,167
1983-84	4,899	918	61	3,920
1984-85	3,912	587	69	3,256
1985-86	3,756	463	60	3,233

SOURCE: State Board of Community Colleges, Division of Vocational, Adult, and Community Education (DVACE), and institutional reports, 1987.

TABLE 8

COMPLETIONS FROM FLORIDA LICENSED PRACTICAL NURSING PROGRAMS
1982-83 TO 1985-86

Year	Completions	Community Colleges	Independents	DVACE
1982-83	2,077	432	62	1,583
1983-84	1,687	436	65	1,186
1984-85	1,232	223	68	941
1985-86	1,445	212	39	1,194

SOURCE: State Board of Community Colleges, Division of Vocational, Adult, and Community Education (DVACE), and institutional reports, 1987.

The trends in Florida LPN enrollments and completions parallel national conditions. The National League for Nursing reported a drop in LPN enrollments of almost 12 percent between 1983 and 1984. The number of graduations in 1984 decreased by 2.5 percent over 1983, following a ten-year period of fluctuating graduation rates.

3. Minority Participation

Current data on male, black, and Hispanic representation in LPN programs and among completers were not available from State sources. The National League for Nursing surveyed Florida LPN programs in 1984. An examination of the

results as displayed in Table 9 reveals little differences in percentage representation for males, blacks, and Hispanics between Florida and the nation.

TABLE 9

PERCENTAGE COMPARISON OF MALE AND MINORITY ENROLLMENTS AND GRADUATIONS IN LPN PROGRAMS IN FLORIDA AND NATIONALLY, 1984

	ENROLLMENTS			GRADUATIONS		
	Male	Black	Hispanic	Male	Black	Hispanic
Florida	5.3%	17.1%	2.8%	6.5%	13.2%	2.5%
Nation	6.6%	15.2%	3.9%	5.2%	11.5%	2.8%

SOURCE: National League for Nursing, Nursing Data Review, 1986.

A second indicator of minority representation among the State's LPN population is information from the 1985 HRS nurse survey. Results indicate that the population of licensed practical nurses in Florida continues to be predominantly white and female. Approximately 76 percent of the State's LPN population responded to the survey; of these, 4.7 percent were male, 15.0 percent were black, and 2.0 percent were of another race.

III. PUBLIC HEALTH

Public health professionals generally work with large populations rather than individually attempting to control or prevent disease, and they promote health through organized community efforts. The scope of public health activities is large, including programs to maintain a sanitary environment, control communicable infections, educate the public in personal hygiene, organize medical and nursing services for the early diagnosis and preventive treatment of disease, and develop the means to ensure everyone a standard of living adequate for the maintenance of health. Currently, the public health work force is found in diverse settings, including professional associations, foundations, voluntary agencies, federal, state, and local governments, profitmaking and nonprofit organizations, and educational institutions. Responsibility for provision of public health activities through direct delivery of services, however, rests primarily on local, state, and federal governments. Counties are the local health unit service areas within Florida. Minimum public health department staff consists of one doctor, nurse, sanitarian, and clerk. Engineers and sanitarians for environmental health, nutritionists and dentists, as well as personnel for health education and office management, statisticians, epidemiologists, social workers, midwives, physicians, veterinarians, health educators, and nursing home/long-term care administrators are other public health professionals.

1. Manpower

A discussion of manpower supply and demand for public health professionals is hampered by both inadequate data bases and the diverse work force involved. Precision in quantifying data for manpower studies is not yet attainable on either the national or state level, resulting in reliance on expert opinion and isolated studies of selected personnel. Demand estimates are particularly difficult as they are highly dependent on legislation, regulations, and federal, state, and local government initiatives.

On the national level, the Department of Health and Human Services reported in 1986 that there were perceived shortages of epidemiologists, environmental health professionals, biostatisticians, nutritionists, public health nurses, and physicians trained in public health and preventive medicine. The Association of Schools of Public Health reports that graduates of public health programs have no difficulty finding employment.

For Florida, a 1980 study conducted by the Task Force on Public Health Education reported substantial need within county public health departments for professionals with graduate preparation. Respondents indicated that for positions where graduate training was either required or preferred, only 29 percent of the identified need was being met. Community or public health nurses, directors of public health nursing, environmental health specialists (sanitarians) and health administrators were positions registering the greatest need. For the 1983 Commission report, a survey of county health department directors found that although the top two or three administrators in a county should have graduate training in public health, in most cases only one held a Master's in Public Health (MPH) degree. Rarely did top administrators in functional areas such as engineering, nursing, and education

have advanced education in public health. At that time, strong preferences were indicated for graduate training specifically in public health rather than in related fields. Also, the MPH degree was preferred for practitioner preparation over the Master's of Science in Public Health (MSPH), which is oriented more towards research and academe. For sanitation workers and nurses, academic preparation at the baccalaureate degree level was preferred.

Little information is available for the State on demand requirements for public health professionals beyond the documents mentioned above. It is apparent that a significant data gap exists relative to the need for public health personnel in Florida. The absence of accurate and timely data on both supply and demand hinders substantive manpower analyses.

2. Programs

The broad range of personnel constituting the public health work force attests to the diversity of professions and academic preparations required at graduate and undergraduate levels. At the graduate level in Florida, three programs in public health currently offer master's degrees through the Master's in Public Health (MPH) and the Master's of Science in Public Health (MSPH). One doctoral program is available.

The State's only College of Public Health, located at the University of South Florida, has been offering the MPH and MSPH degrees since 1984. The College is organized in four departments: Health Policy and Management, Biostatistics and Epidemiology, Occupational and Environmental Health Sciences, and Community and Family Health. Each offers the MPH with several tracks; the MSPH may be earned in Biostatistics and Epidemiology or Occupational and Environmental Health Sciences. Enrollments in the College's early years have been concentrated in the MPH program.

Enrollments at the College of Public Health are shown in Table 10. Between 1983 and 1985, the number of matriculants almost tripled, growing from 51 to 147. The vast majority, over 85 percent, study on a part-time basis.

TABLE 10

FALL ENROLLMENTS BY GENDER AND RACE/ETHNICITY IN THE UNIVERSITY OF SOUTH FLORIDA COLLEGE OF PUBLIC HEALTH 1983 TO 1985

		FEMALE		MALE		BLACK		HISPANIC	
Year	Enrollment	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1983	51	35	68.6	16	31.4	3	5.9	0	0
1984	94	66	70.0	28	29.8	9	9.6	1	1.0
1985	147	102	69.4	45	30.6	10	6.8	5	3.4

SOURCE: Board of Regents, 1987.

Other institutions with master's programs in public health include a joint University of Miami/Florida International University program. The University of Central Florida awarded the MPH degree between 1983 and 1985. The programs at Florida International University and the University of Miami have experienced enrollment increases since their joint MPH program was developed and funded in 1984. The FIU program began with 10 students and had 57 in 1987; the University of Miami program grew from 35 to 71, including 59 students in the MPH program and 12 in the MSPH program. The University of Central Florida and the University of Florida offer courses in related fields.

The number of degrees awarded in public health from the University of South Florida, Florida International University, the University of Central Florida and the University of Miami are detailed in Table 11. Between 1983 and 1987, a total of 187 degrees were awarded from the four institutions. Of the 114 master's degrees awarded by the USF College of Public Health since 1984, 111 were MPH degrees and three were MSPH degrees. Nineteen MPH degrees were awarded by the University of Central Florida. At Florida International University 18 MPH degrees have been awarded since the first graduating class in 1986. Between 1983 and 1987, the University of Miami has granted 18 MPH and 18 MSPH degrees.

TABLE 11

TOTAL MASTER'S DEGREES AWARDED IN PUBLIC HEALTH PROGRAMS IN FLORIDA 1983 TO 1987

	University of South Florida	Florida International University	University of Central Florida	University of Miami	Total
TOTAL	114	18	19	36	187
MALES	36	8	9	17	70 37.4%
FEMALES	78	10	10	19	117 62.6%
WHITES	96	6	16	18	136 72.7%
BLACKS	5	9	1	9	24 12.8%
HISPANICS	6	2	0	5	13 7.0%
OTHERS	7	1	2	4	14 7.5%

SOURCE: Institutional reports, 1987.

In addition to-graduate programs in public health, a number of institutions offer coursework and/or degrees in fields related to public health. Four related fields culminating in master's or baccalaureate degrees are Hospital and Health Care Administration, Environmental and Sanitary Engineering, Health Education, and Dietetics and Nutrition. These are distributed throughout the State University System as well as various private institutions. Additionally, vocational programs provide public health manpower at less-than-baccalaureate levels. Excluding direct care professions, related vocational programs include environmental pollution control technology, occupational safety, radiation protection, water and wastewater technology, and water and wastewater treatment plant operator.

3. Minority Participation

Table 10 details male, female, black, and Hispanic enrollments at the University of South Florida College of Public Health over a three-year period. Males consistently accounted for approximately 30 percent of all enrollments in the College during the years cited. Both black and Hispanic enrollments increased numerically.

All degrees in public health awarded to minorities are shown in Table 11. Over the five-year period examined, males received 37.4 percent of the MPH and MSPH degrees. Approximately 13 percent of all Master's in Public Health Degrees awarded during the period went to blacks while Hispanics garnered seven percent. In general, minority representation in public health master's programs in Florida is higher in terms of the proportion of degrees awarded than in most other health professions.

4. Past Recommendations

School of Public Health and Graduate Programs - As a result of the large unmet demand for public health professionals with graduate training and the lack of a state school of public health in Florida, the Commission recommended in 1983 that priority at the State level be given to the development of a school of public health, to be located at the University of South Florida. As indicated above, in 1984, a College of Public Health was established at the University of South Florida with degree offerings for the MPH and MSPH. In 1987, a doctoral program was also initiated. The College has continued to expand program offerings to meet demand through tracks in the four departments. Service to State public health employees, especially with the MPH degree program, is an important part of the College's commitment as HRS personnel account for approximately 30 percent of enrollment. The programs are accredited by the Council on Education for Public Health.

In its 1983 report, the Commission also supported the development of a cooperative degree program between the University of South Florida and the University of Central Florida as well as a joint MPH program between Florida International University and the University of Miami. Although there was interest in developing a joint UCF/USF program in 1983, lack of external funding and a need to divert existing institutional resources into other programs resulted in the University of Central Florida withdrawing the public health program completely. Nonetheless, the two institutions have continued their working agreement whereby USF students may attend selected courses on

the UCF campus and transfer credit to the USF program. The University of Central Florida has no immediate plans to reopen a public health program.

The joint MPH program between FIU and the University of Miami has been very successful. In 1984, an initial legislative appropriation of $300,000 was made which the universities divided equally. Annual appropriations have remained at this amount. Students may enroll at either institution and take coursework at both. FIU offers concentrations in Environmental Health, Health Promotion, and Health Policy and Administration and the University of Miami offers tracks in Epidemiology, Biostatistics, Health Behavior in Education, Environmental Health, and Health Administration. The close articulation developed by the universities has resulted in flexibility for students and better utilization of resources for the institutions. The programs have had no difficulty attracting qualified students from a variety of academic backgrounds. As illustrated above, growth in enrollments and degree completions has occurred at both FIU and the University of Miami since joint program implementation. The FIU program is under preaccreditation status, with full accreditation expected in 1989. The University of Miami program is accredited by the Council on Education for Public Health. The institutions envision a cooperative doctoral program, contingent on additional funding and collaborative research projects.

At the time of the earlier Commission study, the University of Florida had been granted planning authority by the Board of Regents for a master's degree program in public health. To date, the University continues to offer selected courses in public health areas.

Extension and Outreach Programs - Access to public health programs is enhanced through the USF College of Public Health outreach programs in Sarasota, Orlando, and Tallahassee. While the Sarasota program is ongoing, providing continuous courses for students, the Tallahassee and Orlando sites are designated as modules where courses are offered in the evening over a two-and-one-half year period. Students can thus complete master's degree requirements off campus while employed. Overall, these outreach efforts have been very effective, with plans at USF to continue with offerings at other sites.

The Commission was concerned in 1983 over the availability of continuing education courses for public health personnel. This need is currently being met through efforts of postsecondary institutions, State agencies, and professional associations. The University of South Florida provides continuing education activities in environmental health and nursing through a contract with the Department of Health and Rehabilitative Services in addition to numerous seminars on public health areas. At the State level, HRS also provides a variety of continuing education activities which county health employees receive as part of their employment benefits. The Florida Public Health Association is another provider of courses and seminars. To help meet the continuing education needs of public health professionals, educational institutions, state agencies, and private associations should consider utilizing the Florida satellite network. The network, which includes designated public school districts, community colleges, and state universities, is available to business, industry, government, professional, and educational groups.

Statewide Coordination of Research Priorities - In addition to promoting the development of a College of Public Health in Florida, the Commission recommended that the Board of Regents establish a public health institute to plan and monitor, review and periodically report to the Board on progress in meeting statewide public health education and research needs. Whereas the University of South Florida College of Public Health remains interested in creating such an institute, the need to channel human and financial resources into instructional programs took priority. Currently, the institute remains in the planning stage.

IV. DENTAL EDUCATION

Dental education provides preparation for work in the dental profession as a dentist, dental hygienist, or dental assistant. The University of Florida is the only institution in the State with a dental school. Practice of dentistry in Florida requires licensure; qualification to practice is usually obtained by passing a state examination. Dental hygienist programs are offered through the community college system. Practicing hygienists are also licensed by the State through examination or endorsement. Dental assisting programs are found in the Community College System, vocational/technical centers, and proprietary schools. Licensure is not a requirement for practice as a dental assistant.

A. Dentistry

1. Manpower

Projecting for supply and demand of dentists in Florida is complicated by a number of conditions. Reports and studies published in recent years have projected large surpluses in the number of practicing dentists, resulting in enrollment declines in most dental schools and, in some cases, closure of schools. This in turn has an impact on Florida supply since the State depends on in-migration of dentists to meet manpower requirements. A second phenomenon relating to supply is the increasing participation of women in dental education and practice. National projections anticipate that the number of women active in dentistry by the year 2000 will be three times the present level.

Demand requirements are influenced by dental care needs, which vary considerably and are determined by such factors as age, geographic location, income, education, race, and availability of dental benefit plans and government subsidies for dental services. In addition, advanced technology and improved dental care, particularly apparent in the significant reductions of dental caries in children, affect the type of dental service provided.

These uncertainties in both supply and demand areas make manpower forecasts difficult at best. Recent projection reports include two published in 1986 on the dental profession. One is a national study by the U.S. Department of Health and Human Services and the other, focusing on Florida, was prepared by the Center for Health Policy Research at the University of Florida.

In 1986, the U.S. Department of Labor, Bureau of Labor Statistics, projected a 25 percent increase nationally in employment of dentists between 1985 and 1995. Employment is expected to grow faster than average due to population growth, increased awareness of the importance of dental care, and prepayment arrangements. The manpower study prepared by the U.S. Department of Health and Human Services (1986) predicted that future growth of demand for dental services would exceed growth of supply. This prediction was based on two assumptions: one was that economic growth would continue and the second was that dental productivity had stabilized.

For Florida, the Center for Health Policy Research study anticipated little or no surplus of dentists in the year 2005. Projecting for both a low and a high series, the lowest supply and requirement calculations would produce a deficit of 5.4 percent of dentists in the year 2005; highest supply and lowest requirement estimates would yield no deficit.

A central issue, however, in general manpower conditions is concern over access to dental service. Under federal government guidelines, areas with fewer than 2.0 full-time equivalent dentists per 10,000 people are considered dental manpower shortage areas. The Florida Department of Health and Rehabilitative Services reports that twelve counties (Walton, Franklin, Gulf, Jackson, Taylor, Putnam, Sumter, Union, Hardee, DeSoto, Glades, and Suwannee) were designated in 1985 as dental manpower shortage areas. Many counties in the southeastern corner of the State, such as Palm Beach, Dade, Monroe, Sarasota, and Broward have in excess of 5.0 dentists per 10,000 population.

To summarize manpower and distribution situations, it appears that the demand for dentists may exceed the supply by the turn of the century and that the problem of attracting dentists to underserved areas will continue. The number or supply of dentists through graduates of the University of Florida dental school and in-migration of dentists licensed through the Board of Dentistry should not vary to a great extent in the years ahead. Demand projections, on the other hand, suggest that there will be an increasing need for dental service. The problems of maldistribution of dentists and underserved areas may be alleviated somewhat by the University of Florida's two outreach clinics and the encouragement dental students receive from these experiences to practice in underserved rural and inner city areas. The value of this approach cannot be underestimated. As pointed out in the earlier dental education study conducted by the Commission, "The problem of chronically underserved populations such as people who live in rural communities and low-income, inner-city neighborhoods cannot be addressed simply by increasing the supply of dentists." The issue of manpower supply and demand in Florida will continue to be a problem of geographic distribution -- while the overall number of active licensed dentists will be sufficient to serve the dental needs of the population, the uneven distribution of practicing dentists will result in underserved geographic areas and population subgroups, especially the indigent.

2. Programs

The College of Dentistry of the University of Florida forms a part of the University's J. Hillis Miller Health Center. In addition to this central facility, the College has established two dental outreach clinics. Located in rural and urban areas, the Mayo and Jacksonville clinics respectively provide older rural and disadvantaged inner-city residents access to dental service while at the same time enhancing the clinical experiences of students through opportunities to treat patients who have special dental care needs.

Upon completion of the regular dental program, graduates may continue in one of the following advanced education programs within the College of Dentistry.

- Oral and Maxillofacial Surgery - extractions and treatment of injuries, diseases, and deformities of the mouth, jaw, and face.

- General Practice.
- Oral Pathology - examination of tissues needed for the diagnosis of oral problems.
- Orthodontics - treatment of crooked teeth and correction of bite and alignment problems of the jaws.
- Periodontics - treatment of gum disease.
- Dental Public Health - involvement in programs designed to prevent dental diseases in communities.
- Pedodontics - dental service for children and adolescents.
- Graduate program sponsored jointly by Department of Dental Biomaterials and Materials Science and Engineering.
- Advanced General Dentistry.

Enrollment trends nationally in dental education reveal steady and steep declines from the late 1970s to 1986. The number of applicants has dropped by over 50 percent, and the percentage of applicants enrolled has increased from 37 percent to 78 percent. In contrast, the University of Florida has continued to attract approximately twice as many qualified applicants as can be accommodated in entering classes. The School of Dentistry at the University of Florida generally experienced increases in enrollment, as Table 12 indicates, in the first half of this decade.

TABLE 12

FALL ENROLLMENTS BY GENDER AND RACE/ETHNICITY IN THE UNIVERSITY OF FLORIDA SCHOOL OF DENTISTRY 1981-82 TO 1986-87

YEAR	Enrollment[1]	FEMALE		BLACK		HISPANIC	
		Number	Percent	Number	Percent	Number	Percent
1981-82	273	61	22.3	9	3.3	21	7.7
1982-83	288	58	20.1	10	3.5	28	9.7
1983-84	299	67	22.4	11	3.7	31	10.4
1984-85	301	67	22.3	11	3.7	40	13.3
1985-86	295	60	20.3	13	4.4	43	14.6
1986-87	281	82	29.2	17	6.0	53	18.9

[1] Average of Fall and Spring semesters.

SOURCE: University of Florida, 1987.

As illustrated in Table 13, completion rates show an uneven trend over the five-year period. After an initial decline in graduation rates, completions rose steadily until 1985-86.

TABLE 13

DEGREES GRANTED BY GENDER AND RACE/ETHNICITY BY THE UNIVERSITY OF FLORIDA SCHOOL OF DENTISTRY 1981-82 TO 1986-87

		FEMALE		BLACK		HISPANIC	
YEAR	Degrees	Number	Percent	Number	Percent	Number	Percent
1981-82	64	14	21.9	3	4.7	2	3.1
1982-83	59	11	18.6	2	3.4	6	10.2
1983-84	65	19	29.2	2	3.1	3	4.6
1984-85	69	17	24.6	2	2.9	7	10.2
1985-86	78	9	11.5	3	3.8	7	9.0
1986-87	69	14	20.3	2	2.9	13	18.8

SOURCE: University of Florida, 1987.

Dental education consistently has high persistence-to-graduation rates, usually averaging over 90 percent of the entering class. Nationally, the combined impact of declining dental school enrollments and decreasing applicant-to-enrollment ratio will have a negative impact on numbers of completions. Should current enrollment trends in Florida continue, however, the number of graduates is expected to remain near the first-year enrollment level.

Enrollments in the advanced education programs increased considerably between 1981-82 and 1986-87 (Table 14). Graduate Program enrollment increased by 50 percent. Enrollments in other advanced education specialties rose from 13 to 23 during the six-year period, a 77 percent increase.

TABLE 14

ENROLLMENTS IN ADVANCED EDUCATION PROGRAMS OF THE COLLEGE OF DENTISTRY, UNIVERSITY OF FLORIDA 1981-82 to 1986-87

Year	Total	Graduate Program	Advanced Education Specialties	Graduate-Other Schools	Postdoctoral Fellows
1981-82	21	8	13	0	0
1982-83	21	8	13	0	0
1983-84	20	9	11	0	0
1984-85	23	9	14	0	0
1985-86	29	10	16	0[b]	3
1986-87	38	12	23[a]	1[b]	2

[a] Includes 15 students in Advanced General Dentistry and General Practice Residencies.

[b] Credit to medical school.

SOURCE: University of Florida, 1987.

3. Minority Participation

Female, black and Hispanic participation in the College of Dentistry program demonstrate different patterns, as Table 12 shows. Female representation fluctuated numerically during most of the period, garnering between 20 and 22 percent of enrollments, but rose dramatically in 1986-87 as females comprised nearly 30 percent of Fall enrollment. Racial/ethnic proportions varied between blacks and Hispanics. Blacks had slight numerical increases until 1986-87 when enrollment almost doubled that of 1981-82. A more pronounced trend is evident in Hispanic enrollment, as the 1986-87 numbers were two and one-half times the 1981-82 numbers, increasing from 21 to 53 enrollees.

Table 13 indicates how degree completions among blacks fluctuated during the period from 1981-82 to 1985-86, with a maximum of three degrees going to blacks in any one year. Hispanic degree completions also fluctuated, ranging from two to thirteen degrees awarded each year. Again, the number of degrees awarded to Hispanics in 1986-87 was approximately double that of 1985-86 as this group accounted for almost 19 percent of all dental degrees awarded at the University of Florida in 1986-87.

4. Past Recommendations

In 1984, the Commission made a number of recommendations for dental education in the areas of manpower, the program at the College of Dentistry of the University of Florida, tuition, serving the elderly, continuing education, and

public health dentistry. As the following subsections point out, much has been accomplished in the three-year interim in addressing the concerns raised in 1984.

The Supply of and Demand for Dentists in Florida - The manpower issue in 1984 was addressed by the Commission in terms of quantity and distribution. The Dental Education study indicated that the supply of dentists in Florida was adequate to meet the demands of the population and that the problem of maldistribution of dentists and inadequate service in rural and inner-city neighborhoods would not be remedied simply by increasing the supply of dentists.

Dentist supply is dependent on such sources as dental school graduates, number of active dentists, in-migration, and loss of practicing dentists through out-migration, death, and retirement. Given the fluctuations in dental school enrollments and in-migration as reflected through licenses granted yearly, the manpower situation for dentists should be monitored carefully. An HRS survey in 1985 of active Florida dentists reported that almost half of the sample surveyed felt they did not have enough patients. However, more than one-third of the surveyed dentists practice in Dade, Broward, and Palm Beach counties.

The maldistribution of dentists is being addressed by the University of Florida's outreach clinics. Continued support for these units is important not only for the service rendered to rural communities and low-income groups, but also for the enriched clinical experience they offer to dental students. The College also encourages students to practice in underserved areas through practice management lectures emphasizing the advantages of locating in rural locales or high needs areas. In addition, in its 1986 primary health care plan, the Florida Department of Health and Rehabilitative Services recommended expanding scholarship programs for students from rural or other underserved areas and studying the feasibility of establishing a demonstration dentist distribution program. The Commission supports these approaches as initiatives to improve dental service in shortage areas.

Enrollment Level at the University of Florida College of Dentistry - Since 1985 the College of Dentistry has had an entering class of approximately 75 students each year. Closure in recent years of dental schools at Emory University and Georgetown University, both with many Florida residents enrolled, will continue to affect the available supply of practitioners in the State and place additional responsibility on the University of Florida. Commission recommendations calling for reduced entering class enrollments were made prior to these closures. Enrollment reductions would not be appropriate at this time, nor would an increase in entering class size.

In 1984, the Commission spoke to the need to expand the number of general practice residencies (GPRs) available at the College of Dentistry. Whereas the College had six GPRs at that time, there are now 12. In addition, there are six Advanced General Dentistry (AGD) students for a total of 18 in AGD/GPR. General practice residencies and Advanced General Dentistry programs enable graduates to further develop clinical skills.

Mission of the University of Florida College of Dentistry - Since the College of Dentistry was well into its second decade at the time of the 1984 Dental

Education study, it was felt that more emphasis should be placed on establishing a strong research component, particularly in the areas of geriatrics and gerontology. During the intervening three years, the College has strengthened its research component through increased external funding, addition of faculty, and increased enrollments in the advanced education programs. Extramural research funding tripled between 1983-84 and 1987-88, from $850,000 to $2,800,000. The College currently has 43 grants in such areas as periodontal disease, dental biomaterials, bioglass programs, microbiology, immunology, dental education, and behavioral sciences. In addition, the National Institute of Health funded a Periodontal Disease Research Center in 1985-86 and support is expected to continue until at least 1993. This is one of only five such Centers in the United States. With the recruitment of two nationally prominent researchers, research funding is expected to surpass $3 million in 1987-88. In 1986, the Board of Regents conducted a program review of the College of Dentistry. The consultant's report commends the College's efforts to enhance its research component through attracting greater research support and involving both clinical and basic science faculty.

Tuition Level and Student Indebtedness - Tuition at public and private dental schools continues to increase. A Commission recommendation in 1984 called for a two-phase increase in tuition and fees at the University of Florida. At the time of the earlier study, tuition and fees were $2,037 per 12 months; in-state dental student fees covered approximately eight percent of the costs of their education. In 1986-87, tuition and fees at the University of Florida were $3,235 and increased to $4,693 in 1987-88.

Dental Needs of the Elderly - The University of Florida College of Dentistry has increased its commitment to geriatric dentistry though both research and instruction. The establishment of a new division in geriatric dentistry with a postdoctoral fellowship and addition of faculty with expertise and experience in the field of gerontology are indications of growing emphasis on the care of the elderly. Additional support for geriatric dentistry is evident in the College's increased external funding awards for geriatric research and expansion of the teaching program to include more coursework on geriatric dentistry. Students are provided with clinical practice through rotations to nursing homes. Additionally, the College has access to the Geriatric Training Center in Washington, D.C., which educates lay and professional persons in the care of the elderly.

Continuing Education - As recommended in the earlier dental education study, the University of Florida has continued to assist practicing dentists in fulfilling mandated continuing education requirements by offering courses throughout the State. In 1986-87, 129 activities were offered with 3,743 enrollees in a number of Florida cities. In the 1985 HRS survey of active dentists, almost 92 percent of the respondents felt they had adequate access to continuing education in their specialty.

Public Health Dentistry in Florida - The College of Dentistry has continued to work closely with the Department of Health and Rehabilitative Services in the delivery of direct care and preventive and educational services to underserved populations. The College delivers dental care to children through contracts and participates in treatment of children with facial deformities. The

College has also assumed responsibility for providing dental care at the Sunland Training Center in Gainesville; the facility serves about 850 developmentally disabled individuals. Postdoctoral students and faculty rotate to Sunland.

At the University of South Florida's College of Public Health, public health dentistry is well represented in the curricula. Although there are no courses specifically on public health dentistry, students are made aware of the importance of dentistry and the needs of communities in the area of dental health.

B. Dental Hygiene

State dental practice laws mandate that dental hygienists work under the supervision of a dentist; licensure is required for practice. Hygienists provide educational, preventive and therapeutic services directly to the patient. Among their responsibilities are taking medical and dental histories, taking X-rays, removing scale from teeth, applying topical fluoride, making impressions of teeth for study models, and preparing other diagnostic aids.

1. Manpower

The demand for dental hygienists is contingent to some degree upon the "busyness" and the extent of oversupply of dentists. Anticipated growth in employment opportunities because of expanding population and growing awareness of the importance of regular dental care must be tempered by the possibility of smaller patient loads resulting from an increasing supply of dentists who may choose to perform more services themselves and hire fewer hygienists. A second characteristic of dental hygienist manpower is the high turnover rate. A Florida Dental Association survey suggested that the longevity of hygienists in the marketplace is short.

Reports on employment of dental hygienists in Florida vary. In 1986, there were 3,974 licensed dental hygienists in the State. In 1985, about one-third of responding dentists surveyed by the Florida Department of Health and Rehabilitative Services reported having at least one full-time licensed dental hygienist and an almost equal number had at least one part-time hygienist. Over 96 percent of the respondents reported having no current vacancy. The November 1987 Florida Dental Association survey reported that 90 percent of the respondents employed a dental hygienist; 47.5 percent utilized a hygienist full-time, and 45.3 percent employed a part-time hygienist. It is apparent that a high percentage of dentists, especially those in private practice, currently utilize dental hygienists.

Supply and demand analyses from the Florida Occupational Information System (FLOIS), Florida Department of Labor and Employment Security, indicate that a total potential supply in 1986 of 182 dental hygienists and 332 average annual openings expected during the period 1989 to 1994 will create a statewide undersupply of 150 hygienists annually. The undersupply varies considerably among counties, with a shortage of at least 15 hygienists annually projected for the counties of Charlotte, Collier, Glades, Hendry, Lee, Broward, and Hillsborough. FLOIS projects employment of 4,151 hygienists in 1989, and at

5,041 in 1994, a 21 percent increase. In the FDA survey, projections were higher as respondents forecast a need for 1,046 new hygienist positions by 1992.

The supply of new hygienists annually consists in large part of graduates of programs in the State's community colleges. On the average, approximately 200 students graduated from dental hygiene programs annually between 1981-82 and 1985-86; this number should increase with the recent implementation of a new program and planning underway for others. The Department of Professional Regulation reported a statewide pass rate of 75.6 percent for the January 1987 licensure examination. In the years 1983-84 to 1986-87, the number of licenses granted to dental hygienists annually were 348, 175, 304, and 322. Should the number of licenses awarded continue to increase steadily, statewide supply through new licenses will balance projected demand as determined by average annual openings by 1989. Nonetheless, undersupply may continue in some areas, especially those distant from hygiene programs.

2. Programs

The State's nine dental hygienist programs are located in the public community colleges. Educational preparation usually includes a two to three-year program culminating in an Associate of Science degree. Table 15 displays total enrollments in Florida dental hygiene programs. After fluctuating early in the five-year period, enrollments declined in most institutions.

TABLE 15

ENROLLMENTS IN DENTAL HYGIENE PROGRAMS IN FLORIDA PUBLIC COMMUNITY COLLEGES[1] 1981-82 TO 1985-86

		MALE		BLACK		HISPANIC	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1981-82	526	10	1.9	7	1.3	27	5.1
1982-83	479	5	1.0	8	1.7	29	6.1
1983-84	551	5	0.9	10	1.8	52	9.4
1984-85	528	3	0.6	12	2.3	56	10.6
1985-86	518	5	1.0	14	2.7	56	10.8

[1] Includes both first and second year enrollments.

SOURCE: State Board of Community Colleges, 1987.

Directors of dental hygiene programs around the State generally believe that both the number and quality of applicants is stable or has decreased in recent years. Most report fewer qualified applicants for the spaces available. Reasons cited for this are high costs to students for such things as equipment and uniforms, women choosing other career fields, and concern over diseases such as AIDS.

As Table 16 illustrates, the number of graduates from the programs has also fluctuated during this period. In general, a decline is evident in total completion rates.

TABLE 16

COMPLETIONS IN DENTAL HYGIENE PROGRAMS IN FLORIDA PUBLIC COMMUNITY COLLEGES 1981-82 TO 1985-86

		MALE		BLACK		HISPANIC	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1981-82	220	1	0.5	1	0.5	15	6.8
1982-83	200	2	1.0	1	0.5	12	6.0
1983-84	193	1	0.5	1	0.5	15	7.8
1984-85	241	2	0.8	5	2.1	32	13.3
1985-86	183	1	0.6	4	2.2	17	9.3

SOURCE: State Board of Community Colleges, 1987.

3. Minority Participation

Although male representation in dental hygiene programs declined between 1981-82 and 1985-86, racial/ethnic representation improved (see Table 15). Fifty percent fewer males were enrolled at the end of the five-year period, but black and Hispanic enrollments doubled numerically and proportionally. Hispanics greatly outnumber blacks in dental hygiene programs, by almost five to one.

Table 16 shows that completion rates for both males and blacks are very low, especially when compared to the Hispanic rate. Black completion rates, nonetheless, increased from less than one percent of the total in 1981-82 to over two percent in 1985-86. With the exception of one year, Hispanics have consistently graduated approximately 15 students annually from dental hygiene programs.

4. Past Recommendations

Many of the recommendations in the 1984 related to dental hygiene and assisting programs concerned the demand for existing programs and analysis of need for opening new programs. As part of the program review process established by the State Board of Community Colleges, a Level III or statewide review of dental hygiene programs is underway for the 1987-88 academic year. The review will examine such concerns as program duplication, employment opportunities, enrollment trends, costs, placement, minority representation, and manpower.

In the previous report on dental education, the Commission recommended no expansion in the number of dental hygiene programs and consideration of enrollment reductions or possible termination of some existing programs should demand continue to drop for these programs. In addition to the eight programs existent in 1984, a new program was initiated recently and some other community colleges are studying the need for local programs. Although most of the nine programs currently operating report fewer applicants for available slots in entering classes, demand for hygienists is greater in some parts of the State than in others and substantiated unmet need would support new program development in underserved areas. In addition, the State Board of Community Colleges found a statewide placement rate of 91 percent for the 1984-85 academic year completers of dental hygiene programs. Whereas placement rates varied among individual institutions, it is apparent that most students are employed in a related area within one year of completing the program. In general, however, uncertainty in the demand for dentists, their utilization of hygienists, and regional variations in employability suggest that institutions exercise caution when considering program establishment and expansion. Available statewide supply and demand information indicates limited need for either establishing new or expanding existing dental hygiene programs.

The Commission has been concerned with licensure passing rates of dental hygiene programs as they are important measures of the quality of education received. The Commission has recommended in the past that the State monitor the passing rates of program completers. In the January 1987 examination, pass rates ranged from 100 percent to 50 percent among the existing programs; rates varied from 78.8 percent to 33.3 percent for the June 1987 examination. The January examination pass rates are generally higher as fewer examinees are first-time test takers. The State Board of Community Colleges looks at licensure passing rates as one criterion for Level I program review reports. Although no standard has yet been set, staff at the State Board of Community Colleges report that a task force will be established to address this issue.

V. CHIROPRACTIC MEDICINE

The chiropractic profession and chiropractic medical services appear to be steadily gaining in popularity throughout the U.S. This trend parallels the growth in acceptance of holistic medicine, neuromassage, acupuncture, and nutritional counseling. Chiropractic theory holds that correction of certain spinal functional defects allows the body's natural defenses to promote healing. Doctors of chiropractic medicine manipulate the spine to restore the normal physiological functioning of its neuromusculoskeletal structures. They use radiology and other testing measures but not drugs, medicine, or incisive surgery. Some chiropractors also include physical therapy, nutrition, and other counseling in their practice. In Florida, chiropractors are licensed either by examination after a Doctor of Chiropractic Medicine (DC) degree is earned or by endorsement, an option which became available in 1986.

1. Manpower

Since there is no chiropractic program in Florida, the supply of doctors of chiropractic medicine comes solely from in-migration. The number of recent graduates starting practice in Florida, as indicated by numbers of new licenses granted by the Department of Professional Regulation, increased at a steady pace during the 1980s. In 1984, approximately 1,895 chiropractors held active Florida licenses, a figure which reflected an increase of 1,200 during the period 1980-1983. New licenses were granted in Florida at the same average annual rate of approximately 300 between 1984 and 1987, resulting in an additional 1,200. According to the State Department of Professional Regulation, there were 2,086 licensed active chiropractors in Florida in 1986. The 1980 ratio of chiropractors to the population was 2.1 per 10,000 population in Florida, compared to 1.0 per 10,000 nationally. Despite the apparent steady growth in the profession, ten Florida counties had no chiropractors in 1986 and most rural counties tended to be underserved. The counties with the highest ratios of chiropractors, ranging from 2.1 to 3.7 per 10,000 population were those of the southern Gulf coast and Broward, Palm Beach, Martin, and Alachua. Results of a 1981 survey of chiropractors conducted by the Florida Department of Health and Rehabilitative Services (HRS) indicated that over 85 percent of the respondents believed there was an adequate or excessive supply of chiropractic physicians in their areas.

Data on utilization of chiropractors are sparse, as are projections on demand for chiropractic service in Florida. The 1983 HRS survey of Florida chiropractors found that practitioners are treating more patients weekly and are serving more new patients yearly than in 1981. In 1986, a study of supply and requirements for chiropractors in Florida was prepared by the Center for Health Policy Research of the University of Florida. The report forecasts a surplus of chiropractors over demand by the year 2000 and suggests that the State will not experience a scarcity of chiropractic practitioners through the year 2005.

2. Programs

Sixteen chiropractic colleges, 15 in the U.S. and one in Canada, are currently approved by the Florida Board of Chiropractic Medicine for licensure preparation. In 1985-86, those with the largest number of Florida residents enrolled were located in Georgia, Iowa, Illinois, Missouri, and Texas, accounting for 392 of the 418 Florida residents pursuing chiropractic medical education. Applicants for licensure must pass the National Board of Chiropractic examination after completing a four- to five-year college education, including at least 4,200 clock hours of sciences and two semesters of internship.

3. Minority Participation

Data from the 1981 HRS survey indicate that of the 788 active chiropractors and Florida residents responding, 94.1 percent were male. The race/ethnicity breakdown was 98.6 percent whites, 0.5 percent blacks, and 0.4 percent Hispanics.

4. Past Recommendations

In its 1984 report, the Commission addressed the possible allocation of State funds for chiropractic education. At the time of the 1984 study, the University of Tampa was considering a joint program with National Chiropractic College in Illinois. Should the proposal have been implemented, a one-time State appropriation of $150,000 was suggested. The University of Tampa has since decided not to proceed with the joint program. No State funds have been allocated, nor are projected, for a program in chiropractic education in Florida.

VI. MEDICAL EDUCATION

A. Allopathic and Osteopathic Physicians

Medical education for both allopathic and osteopathic physicians is offered in Florida. Allopathic medical programs are available at two public institutions, the University of Florida and the University of South Florida, and one independent institution, the University of Miami. The State's one osteopathic medical education program is in an independent institution, the Southeastern College of Osteopathic Medicine (SECOM). The charter class at SECOM was enrolled in 1981.

Licensure is a prerequisite to practice as a physician. Licensure may be granted through examination or endorsement. In Florida, medical doctors and doctors of osteopathic medicine are governed by two separate boards and practice acts. While the academic preparation of allopathic and osteopathic physicians is similar, osteopathic practice is based in part upon educational standards and requirements emphasizing the importance of the musculoskeletal structure and manipulative therapy in the maintenance and restoration of health.

1. Manpower

The debate over the supply and demand of physicians continues as a focal issue in discussions of medical education. Manpower projections for allopathic and osteopathic physicians rely on a combination of supply and demand information. Reports examined and data gathered for this study reveal conflicting information on supply of physicians (allopathic and osteopathic) and few reliable attempts to project manpower supply and requirements. What is available from the Center for Health Policy Research at the University of Florida projects a near balance of physicians by the year 2000. Analysis of available data indicates that future requirements for physician health care should be met through the four programs currently available in the State and through endorsement of in-migration of physicians. Major problems, however, will persist in providing adequate physician health care for certain subpopulations and geographic areas and for coverage in selected specialty areas.

Physician supply is augmented through new licenses granted. On the average in recent years, over 200 licenses have been granted through examination, and a very large number of physicians (approximately 1,800 each year) receive endorsement to practice in Florida. While not all new graduates and endorsees practice in Florida, the State has a considerable supply yearly of new physicians added to those in practice. Accurate and timely data on current supply of physicians is essential for projections. Yet, a study for the Florida Board of Regents, The Geographic and Specialty Distribution of Physicians of Florida, reported that there was no reliable single source of information on the number of physicians practicing in the State. The study concluded that there were 23,586 active specialty physicians (allopathic and osteopathic) in Florida in 1986, with a practicing equivalency of 21,511. The Department of Health and Rehabilitative Services reported that osteopathic physicians comprised about six percent of the active physician supply in 1985.

The Center for Health Policy Research at the University of Florida estimates there will be 21,451 practicing physicians (allopathic and osteopathic) in 1990 and 24,188 by the year 2000. The ratio of active allopathic physicians to 100,000 population is estimated to be 16.5 in 1991 and 14.4 in 2000. Separate projections were not available for osteopathic physicians.

As discussed in the introduction to this review, demand projections are particularly difficult for Florida. The Center for Health Policy Research projects that the State will have a physician oversupply of 15 percent in 1990, which declines to only 3.4 percent by 2005. In considering the potential for error, the report concluded that physician supply and requirements will be near balance by the end of the century. An analysis of general manpower supply and demand for the State is appropriate, yet attention must also be given to specific problems of access and specialty mix.

Although the State currently has an adequate number of active physicians, access in some geographic areas and for certain population subgroups continues to be problematic. Geographic distribution within a county or neighborhood does not necessarily increase availability of care, especially for the elderly dependent on medicaid and the medically indigent. Recent reports by the Florida Department of Health and Rehabilitative Services (HRS) identify the large numbers of Floridians whose age and/or economic condition reduce their access to physician care. Although HRS estimated that there were 19,564 active physicians in Florida, in 1985, six counties (Duval, Hillsborough, Orange, Palm Beach, Broward and Dade) representing 48.7 percent of the State's population accounted for 60 percent of all active physicians in the State. The State average of active physicians per 10,000 population in 1985 was 17.2, very close to the minimum of 18 recommended by the Graduate Medical Education National Advisory Committee (GMENAC). Nonetheless, 49 counties in Florida fell below the GMENAC standard; many of these counties had low population densities. Parts of other counties with adequate physician-to-population ratios were, at the same time, Health Manpower Shortage Areas. Access to physicians for health care is inadequate for thousands of citizens -- especially those in rural and urban low-income areas and the indigent.

Specialty mix is a second problem area. Whereas the much-publicized oversupply of physicians is supportable in general, undersupply exists in some specialties. The study found a near balance (a .91 ratio) overall when comparing figures on Florida's practicing physician manpower with GMENAC standards, but undersupply in some specialties such as pediatric subspecialties, hematology/oncology, pulmonary diseases, and psychiatry was more pronounced. While medical and surgical specialties in general showed oversupplies of physicians, many primary care and other specialties fell below GMENAC standards.

2. Programs

Fall enrollments for 1984-85 and 1985-86 are reflected in Table 17. While enrollments were quite stable in the allopathic programs during the period, the impact of the osteopathic program at SECOM is evident in 1985-86 enrollments as the institution increased its maximum entering freshman class size to 100 students. The two public institutions accounted for 49 percent of total enrollments in 1984-85 and 47 percent in 1985-86.

TABLE 17

ENROLLMENTS IN FLORIDA MEDICAL SCHOOLS
1984-85 AND 1986-87

Year	Total	UF	USF	University of Miami	SECOM
1984-85	1,650	438	373	576	263
1985-86	1,715	432	377	576	330

SOURCE: Board of Regents and institutional reports, 1987.

Completion data are shown in Table 18. Close to 350 students graduated annually from the three allopathic programs. Again, as SECOM's freshman class size has grown, the number of graduates has increased rapidly. This trend is expected to level off after 1988 as continuous classes of 100 entering freshmen proceed through the program.

TABLE 18

GRADUATES OF FLORIDA MEDICAL SCHOOLS
1984-85 and 1985-86

Year	Total	UF	USF	University of Miami	SECOM
1984-85	387	117	89	146	35
1985-86	408	115	91	141	61

SOURCE: Board of Regents and institutional reports, 1987.

3. Minority Participation

Table 19 compares the proportions of females, blacks, and Hispanics enrolled at the four medical schools over a two-year period. The proportions were consistent although numerical increases occurred in all three categories. Females accounted for slightly over 28 percent, blacks had 4 percent and Hispanics held 8.5 percent of total enrollments.

TABLE 19

ENROLLMENTS IN FLORIDA MEDICAL SCHOOLS
BY RACE/ETHNICITY AND GENDER
1984-85 and 1985-86

Year	Total	FEMALE		BLACK		HISPANIC	
		Number	Percent	Number	Percent	Number	Percent
1984-85	1,650	465	28.2%	65	3.9%	140	8.5%
1985-86	1,715	491	28.6%	70	4.1%	147	8.6%

SOURCE: Board of Regents and institutional reports, 1987.

A comparison of medical school graduates, as illustrated in Table 20, reveal some interesting points. Women earned about 25 percent of the degrees awarded between 1984 and 1986; blacks increased their share of degrees both numerically and proportionally, while Hispanics decreased in both ways.

TABLE 20

GRADUATES OF FLORIDA MEDICAL SCHOOLS
BY RACE/ETHNICITY AND GENDER
1984-85 and 1985-86

Year	Total	FEMALE		BLACK		HISPANIC	
		Number	Percent	Number	Percent	Number	Percent
1984-85	387	99	25.6%	10	2.6%	39	10.1%
1985-86	408	99	24.3%	16	3.9%	29	7.1%

SOURCE: Board of Regents and institutional reports, 1987.

4. Past Recommendations

The complexity of medical education issues for the State resulted in numerous recommendations in the 1985 report. The areas of concern reflected through these recommendations included medical programs in Florida public and independent postsecondary institutions, tuition and student financial assistance, minority participation, geriatric and graduate medical education,

and cost containment. Past recommendations for each of these are discussed below.

Medical Programs in Florida - The 1985 report recommended that no new programs in medical education be established in the State and that existing enrollment levels be maintained. It was felt that the State's responsibility to provide access to medical education and the State's needs for adequate physician manpower to the year 2000 could be sufficiently met in this manner. To date, no new medical programs have been added; enrollment levels have remained stable over the last five years. At the request of the 1987 Legislature, the Board of Regents, in consultation with the Commission and the three institutions offering allopathic medical education in the State, was to develop a plan to phase down the total enrollment in the Colleges of Medicine of the three institutions. The plan submitted February 1, 1988 provided for enrollment reductions in each entering class beginning in the Fall 1989, with both the University of Florida and the University of South Florida cutting back by ten students and the University of Miami by 12 students. However, the two State universities preferred not to reduce enrollments, and the Board of Regents did not recommend the reductions.

Public Support for Independent Medical Schools - The Commission was concerned that the important role of the independent sector in meeting State manpower needs as well as access to medical education continue to be recognized. As contributors to physician manpower and recipients of State assistance, medical programs at the University of Miami and Southeastern College of Osteopathic Medicine (SECOM) were discussed in the previous report.

For a number of years the State has subsidized Florida residents enrolled at the University of Miami School of Medicine, the State's first accredited medical school. The 1987-88 Legislative appropriation was $10,548,623 for 547 Florida residents. As recommended in 1985, the School of Medicine has submitted annual reports on medical education, including information on such areas as admission standards, retention rates, specialty choice, location of practice, and minority participation.

The Southeastern College of Osteopathic Medicine has received State support for enrolled Florida residents since 1981. Although the three allopathic medical schools in the State produce sufficient numbers of physicians, SECOM has indicated a strong commitment to producing family physicians. The program is also designed to address other State concerns such as practice in rural areas, service, lower-income migrant and minority health care needs, and geriatric medical practice. The Commission had recommended earlier against increased appropriations per student for Florida residents at SECOM until full accreditation was received by the institution; accreditation was granted in 1985. For the 1987-88 academic year, the Legislature appropriated $1,408,000 or $4,400 for each of the 320 Florida residents. This represents increases both in the total number of students covered and in the subsidy per student. Responsibility for annual evaluation of state support for SECOM has continued to fall within the Commission's responsibility for advising the State Board of Education on state contracts with independent institutions.

An additional Commission concern in 1985 was the lack of a cost accounting procedure capable of producing comparable data on the costs of medical

education for the three allopathic medical schools. In response to proviso language in the 1985 and 1986 General Appropriations Acts, the Board of Regents, in consultation with the Commission and the three allopathic medical schools, developed a report addressing the cost of medical education. Included in this report was a comparison among the three institutions of medical education expenditures. Between 1977 and 1985, total budgets increased by over 150 percent at two institutions and more than 250 percent at a third university. The report also documented a decline during that period in faculty effort as a percentage of estimated expenditures per student, and suggested that this resulted from a decrease in federal financial support. This reduction caused faculty to rely more on medical practice plans and research for funding.

Tuition and Student Financial Assistance - The Commission has consistently expressed concern about the increasing indebtedness of medical students and the negative effects of medical school costs on access for students from minority and disadvantaged families. This concern prompted recommendations in 1985 related to a service-conditional loan forgiveness program for medical students. A Medical Education Tuition Reimbursement Program has been established by the Legislature to encourage qualified medical professionals to practice in underserved locations in which shortages of physicians exist. Administered by the Department of Health and Rehabilitative Services, the primary function of the program is to make payments that offset tuition paid by students for studies leading to a medical degree or licensure. An initial budget request has been made for $139,094 to fund tuition reimbursements and program administration beginning with the 1988-89 fiscal year. The program allows payments of up to $10,000 per year or an amount equivalent to one-third of the total tuition, matriculation, or registration fees paid by the recipient during enrollment in medical school, whichever is less, for a maximum of three years. Only physicians licensed in Florida, trained in and agreeing to practice in a primary care specialty as identified by Health and Rehabilitative Services, qualify for this program.

The Commission also addressed medical education tuition and fees in order that they more closely approximate both tuition levels at public medical schools in other large states and the percentage of costs borne by undergraduate students in the State University System. These concerns resulted in a recommendation to raise tuition and fees at the public medical schools to represent approximately 13 percent of the costs of instruction. For the 1987-88 academic year, annual tuition for Florida residents increased 29.7 percent over the 1986-87 level to $4,350; out-of-state students pay $10,730.

Minority Participation in Medical Education - The underrepresentation of blacks and Hispanics in Florida medical schools was examined in the Commission's earlier report; recommendations centered on financial aid as well as pre-collegiate and retention initiatives as approaches to improve minority participation.

A major financial incentive for black students is offered through the State University System's grants-in-aid or Delores A. Auzenne Fellowship Program. Two Commission recommendations in 1985 questioned how this program serves minority medical students and if it could be extended to include Hispanics. The Office of Equal Opportunity Programs of the State University System

reports that of the 121 Fellowships for graduate studies awarded to students in first professional programs between 1979-80 and 1987-88, 55 (45 percent) have been to students in medicine. Law students received 20 percent and pharmacy and veterinary medical students received about 14 percent each. Medical students received the greatest proportion of the 437 awards granted during the nine-year period when compared to all first professional and graduate programs. The Delores A. Auzenne Fellowships serve black students in post-baccalaureate programs. Although a budget increase was requested in 1987-88 to include Hispanics in the awards, no additional funds were appropriated by the Legislature.

Individual medical schools have developed successful strategies to enhance minority participation in medical education. For example, the University of Florida College of Medicine has an on-going program with high school counselors and also brings sophomore and junior high school students to campus for a health science teach-in. The College recruits actively at predominantly black colleges in the Southeast and sponsors a four-week summer instructional program for each entering class. The University of Miami offers an on-campus Health Careers Motivation Program designed to identify, recruit, and select minority students and thus facilitate their entry into health professions programs. The seven-week full-time summer activity for college students, especially juniors and seniors, reinforces academic skills, provides clinical exposure, and encourages faculty-student interaction. The program has been State supported through college reach-out funds. Thirty-one students, 27 of whom were black, participated in the summer of 1987, representing eight Florida colleges and universities.

Since the 1985 report, information on medical education has been added to the CHOICES system, a network of computerized terminals located in high schools, area vocational-technical centers, community colleges, state universities, private postsecondary institutions, prisons, and vocational rehabilitation centers throughout Florida. CHOICES contains information on careers, schools, and financial aid.

Geriatric Medical Education - The curricula in Florida's medical schools have increasingly incorporated geriatric education through both clinical and didactic exposure. Medical students serve clinical rotations in hospital geriatric units or in geriatric homes. Most students also have required geriatrics courses. For practicing physicians, continuing education programs throughout the State include activities related to geriatrics. Results from the 1985 HRS survey of Florida licensed physicians reveal that 82.2 percent of medical doctors and 72.7 percent of doctors of osteopathic medicine felt they had an adequate background in gerontology to respond to the needs of their patients.

Graduate Medical Education - As described in the 1985 report, direct state assistance to graduate medical education is available through the Community Hospital Education Program and through appropriations via public medical school budgets to advanced teaching hospitals. The Community Hospital Education Program provides for State subsidies of residency programs in hospitals. Funds are allocated on a per capita basis for specialties identified by the Community Hospital Education Council as undersupplied. In 1985-86, over $5.5 million was allocated and the program supported 704

residents in seven programs -- Emergency Medicine, Family Practice, Internal Medicine, Internships, Pediatrics, Psychology, and Child Psychology.

Cost Containment - In the Commission's 1985 recommendations, some suggestions relating to cost containment focused on the projected Board of Regents' program review of medical education. Although the Board has not yet conducted a program review of medical education, discussions with medical school representatives reveal that cost containment has been more integrated into the curricula since 1983. Through coursework, students receive instruction on factors such as length of stay, cost of procedures, medications, funding from different agencies, as well as the shift from hospital to ambulatory care. A second area of Commission concern centered on the work of the Hospital Cost Containment Board's Medical Education Council (MEDEC), established in 1983. It was recommended that MEDEC continue to develop strategies to improve the education of physicians-in-training and practicing physicians in the concept of cost-effective quality medical care. MEDEC is participating in the development of a computer-based project to improve cost awareness among interns and residents, medical students, and practicing physicians. In addition, the Council has recommended to the Florida State Board of Medical Examiners that measurements of the understanding of cost-effectiveness concepts be incorporated in board tests in Florida. Yet, it is apparent from the 1985 Health and Rehabilitative Services survey of Florida physicians that there is a continuing need for cost containment information. In 1985, 23.4 percent of the responding medical physicians and 25.1 percent of the osteopathic physicians felt that education in cost containment was inadequate.

B. Physician Assistants

Physician assistants provide health and medical services, as primary care practitioners, under the supervision of a doctor. Services include diagnostics, therapeutics, and health maintenance. Physician assistants function in varied settings, allowing focused and extended application of the doctor's knowledge and skills. The use of physician assistants has been found to be a cost-effective way to provide selected services previously performed only by physicians.

1. Manpower

An overview of physician assistant (PA) manpower is limited by the scarcity of data, particularly for demand. No studies are currently available on the projected need for PAs nor on the extent of present unmet need in Florida. Given this sparsity of manpower data for the relatively young physician assistant profession, in addition to the ambiguity and lack of uniformity of state regulations regarding utilization of physician assistants and the uncertain future of limitations on reimbursement for physician assistant services, prediction of supply and demand remains speculative.

The number of physician assistants currently practicing in the U.S. is estimated to be 18,000, compared to about 16,500 in 1985, when the estimated number of physician assistants per 100,000 population in the United States was 7.1. Although the initial rapid expansion of the profession has decelerated in the past few years, the physician assistant student population has stabilized and fewer than two percent of physician assistants report a desire

to leave the profession. Nearly 20,000 physician assistants are anticipated to be practicing by the end of 1990. Physician assistants continue to demonstrate flexibility and adaptability in matters of medical specialty and practice characteristics (type and location), a fact which further indicates availability.

The Department of Professional Regulation reported Florida's physician assistant supply at 691 in 1985, a ratio of 6.0 per 100,000. About 26 new physician assistants are produced annually from the University of Florida. The State's rapidly growing in-migration is expected to include additional physician assistants from other states.

As demand increases for medical attention in underserved or primary health care shortage areas, especially in inner city and rural sites, need for PAs may also increase. In 1986, the U.S. Department of Labor, Bureau of Labor Statistics, estimated that by 1995 employment of physician assistants nationally would increase 31 percent or more. This forecast was based on the expected growth in hospitals and health maintenance organizations and in consideration of the advanced skills required in specialized health care areas. Demand for physician assistants is likely to increase, in addition, because of the greater cost effectiveness associated with the utilization of physician assistants as physician extenders.

Physician assistants are employed in settings, such as correctional institutions, in which physicians have been reluctant to serve. Also, growing demand for physician assistants as hospital housestaff has been triggered by cutbacks in physician residencies, due to declining numbers of medical school graduates and to immigration restrictions on foreign medical graduates. Opinion differs, however, regarding level of physician supply and its impact on the employment outlook for physician assistants. If the physician supply increases, it is not clear whether this will be a competitive force for physician assistants, decreasing the demand for their services, or whether it will increase demand for physician assistants.

Although Florida has an adequate supply of physicians in most specialty areas, their uneven geographic distribution causes gaps in availability of primary care. The Florida Department of Health and Rehabilitative Services recommended in 1986 that the State establish a Health Services Corps program for physicians, dentists, and physician extenders. Students would be provided loans in return for a commitment to practice in publicly funded programs or in rural or other underserved areas. A similar program on a national scale had provided a significant number of health care professionals for shortage areas and community and migrant health centers. Florida was assigned 210 health professionals in 1986, but the program is being phased out and will end by 1994. The State Health Corps program was suggested to help satisfy the resulting demand. Expanding subpopulations of multicultural groups and older residents in Florida will have an impact, in the coming years, on the demand for physician assistants as need intensifies for physician extenders, low-cost providers, and specialists in geriatric health care.

Available information on the supply of and demand for physician assistants suggests that there may be a slight increase in the demand for PAs.

Unfortunately, the lack of substantial requirement data severely limits this manpower analysis.

2. Programs

The accredited Physician Assistant Program at the University of Florida, the only program in the State, culminates in a Bachelor of Health Science degree. Applicants should have completed coursework in general education emphasizing sciences and mathematics and should have at least one year of health care work experience. The three-semester academic curriculum, taught in classrooms, laboratories, and clinical facilities, consists of a foundation in medical and behavioral sciences. Coursework is followed by 14 one-month supervised clinical experiences.

Nearly 2,500 students enrolled in 49 baccalaureate physician assistant programs in the U.S. in 1986-87. A 1987 national study of physician assistant programs reported that total numbers of applicants from 1983 through 1986 decreased while total numbers of enrollments remained stable. During the period 1983 to 1986, the number of qualified applicants to the University of Florida program increased from 55 to 77 (40 percent), while entering class enrollments remained stable (generally 30 per year) due to limited resources for program expansion. (See Table 21)

TABLE 21

ENROLLMENTS IN THE PHYSICIAN ASSISTANT PROGRAM, UNIVERSITY OF FLORIDA, BY GENDER AND RACE/ETHNICITY 1981-82 TO 1987-88

		FEMALE		BLACK		HISPANIC	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1981-82	59	20	33.9	3	5.1	0	0
1982-83	56	17	30.4	1	1.8	3	5.4
1983-84	55	19	34.6	7	12.7	1	1.8
1984-85	58	31	53.5	7	12.1	5	8.6
1985-86	57	33	57.9	5	8.8	3	5.3
1986-87	60	30	50.0	1	1.7	2	3.3
1987-88	61	36	59.0	2	3.3	5	8.2

SOURCE: University of Florida, 1987.

Completions from the University of Florida program between 1981 and 1987 were relatively stable, with an average of 26 degrees awarded annually (see Table 22). In comparison, nationally the average graduating class size was 22 students.

TABLE 22

GRADUATIONS FROM THE PHYSICIAN ASSISTANT PROGRAM
UNIVERSITY OF FLORIDA, BY GENDER AND RACE/ETHNICITY
1981-82 TO 1986-87

Year	Total	FEMALE		BLACK		HISPANIC	
		Number	Percent	Number	Percent	Number	Percent
1981-82	29	11	37.9	1	3.5	0	0
1982-83	28	8	28.6	1	3.6	0	0
1983-84	25	8	32.0	0	0	3	12.0
1984-85	27	10	37.0	4	14.8	1	3.7
1985-86	23	14	60.9	2	8.7	3	13.1
1986-87	28	14	50.0	1	3.6	0	0

SOURCE: University of Florida, 1987.

3. Minority Participation

Nationally, both female and racial/ethnic minority representation in physician assistant programs increased slightly between 1983 and 1987. Women enrolled and graduated in increasing proportions of total enrollment (from 53.4 percent to 62.2 percent). In the last two years, programs reported enrolling about twice as many black females as black males, and about 1.7 white females for each white male. Hispanic and other non-white women and men enrolled in nearly equal numbers.

The University of Florida program data regarding enrollment of women parallel the national data. Women's participation increased between 1981 and 1987 from 33.9 percent to 59 percent. Concurrently, women earned a larger percentage of degrees granted from 37.9 percent in 1982 to 50 percent in 1987.

The participation level of blacks and Hispanics in the University of Florida programs, at 11.5 percent, was lower than the national level of 21 percent during the 1986-87 academic year. During the six-year period from 1981-1982 to 1986-87, the program witnessed an increase in black enrollment from 5.1 percent in 1981 to 12.7 percent in 1983, followed by annual decreases to 1.7 percent in 1986. (Table 21) Nevertheless, the decline was reversed when 1987-88 brought black enrollment up to 3.3 percent. Numerical enrollment also fluctuated for Hispanics, ranging from one student to five as Table 21 illustrates.

Program completion data indicate a similar rise and fall during the same six-year period (see Table 22). Blacks comprised only 3.5 percent of graduates in 1982 and only 3.6 percent in 1987. However, they were 14.8 percent of graduates in 1985. At the same time, no Hispanics were enrolled or graduated in 1982 and none graduated in 1983 and 1987. But in 1984, while no blacks graduated, Hispanics earned 12 percent of degrees awarded.

VII. ALLIED HEALTH

Allied Health Education involves an array of health professions. When defined broadly, allied health includes all health-related occupations, with the exception of medicine, nursing, dentistry, pharmacy, podiatry, optometry, and public health. The Commission on Allied Health Education Accreditation (CAHEA) estimated in 1982 that this definition would encompass 63 percent of the health care work force practicing in more than 100 occupations. In its 1986 report on the health professions, the U.S. Department of Health and Human Services (HHS) more narrowly defined allied health occupations into specific groups receiving professional training at the collegiate level and providing specialized services with a significant impact on health care. The report estimated that there were 1.235 million allied health personnel in 1984. Allied health includes such occupations as medical technology, cytotechnology, medical laboratory technology, dietetics, dietetic technology, medical record administration and technology, occupational therapy, physical therapy, radiologic technology, respiratory therapy, speech-language pathology, and audiology, as well as such ancillary personnel as assistants to doctors, dentists, and nurses. Employment sites for these professionals include hospitals, clinics, private offices, mobile medical emergency units, and independent laboratories. Quality health care is dependent on this diverse group of allied health professionals for service delivery.

Allied health personnel receive education and training at a variety of sites and may achieve varying levels of academic preparation, ranging from certificates through doctoral degrees. Allied health programs are found in educational institutions, in non-collegiate institutions such as proprietary schools, public vocational-technical centers, and trade schools, and in hospital settings. Consequently, different allied health personnel receive a variety of didactic and clinical experiences in a number of settings. A comprehensive discussion of allied health professions is further complicated by the variety in licensure practices. Licensure through the Florida Department of Health and Rehabilitative Services is required for some allied health professions, others are licensed by the Department of Professional Regulation, and others have no licensure requirements.

1. Manpower

A discussion of manpower supply and demand for the allied health professions is limited by numerous conditions. Foremost is data--no one agency functions as a central data collection point. This situation is exacerbated by the growing diversification in the allied health occupations, resulting in large part from increased technological expansion and complexity in these professions. Also, within available data bases, terminology often fails to clearly distinguish between titles, position levels, and educational program requirements and content. An additional hindrance is the constant evolution of payment procedures, cost containment policies, and hospital workforce levels. Finally, state and national projections can be deceptive, failing to identify regional maldistribution patterns and imbalances resulting from tourist influx and in-migration. The diversity among allied health occupations and work sites makes it difficult to generalize about manpower supply and demand for these health professionals. Consequently, the following

discussion reflects conditions in selected allied health occupations and is dependent on available data. Also, due to the lack of supply and demand data for Florida, the discussion relies on national information contained in the 1986 HHS report on health professions

Extensive federal support for allied health education during the latter half of the 1960s and throughout most of the 1970s stimulated growth nationally in the supply of allied health professionals. Funding at the federal level provided for construction of teaching facilities, equipment purchases, and faculty salaries. Additional support was provided for interdisciplinary programs, curriculum development, career ladder programs, minority recruitment and graduate education. Institutions across the nation, including some in Florida, benefited from this injection of support; programs flourished and the number of allied health personnel increased significantly as the demand for their services also rose. Since 1980, however, the federal budget for allied health has diminished, and the sustained growth in supply, characteristic of the previous decade, has generally stabilized. In contrast, the U.S. Department of Labor, Bureau of Labor Statistics, forecasts faster than average growth in the demand nationally for allied health personnel.

In its 1986 report, HHS estimated that the allied health work force increased by about 13 percent between 1980 and 1984. Substantial growth rates (20 percent or more) were reported in speech pathology and audiology, dietetic services, and occupational therapy. Smaller growth rates were found for respiratory therapists and clinical laboratory personnel, with the exception of cytotechnologists. Nonetheless, most of the allied health programs examined by HHS were experiencing reductions in student enrollment. Although the report concludes that a future surplus of allied health professionals is expected, it also cautions that an adequate supply of applicants, entering students, graduates, and practicing professionals needs to be maintained in allied health fields.

The supply of allied health personnel in Florida appears to be similar to the national situation. Whereas the current supply in most allied health occupations should keep pace with demand, a declining number of applications and admissions suggests that some programs may not be able to maintain enrollments. Many program directors and deans of allied health programs have expressed concern over the decline in qualified applicants and general recruiting difficulties.

A study by the Florida Hospital Association (1985) indicates an anticipated increase in demand for many allied health occupations. Also, for the period 1989 to 1994, the Florida Occupational Information System (FLOIS) projects an undersupply, to varying degrees, in ten allied health areas requiring less-than-baccalaureate degree preparation (Table 23), with some occupations projected to experience large imbalances between supply and demand. FLOIS data forecast an undersupply during the five-year period in nuclear/radiologic technology and in medical/dental technology, while an oversupply of medical assistants and emergency medical technicians/paramedics is expected. For purposes of this report, only limited use of FLOIS information is possible, however. It does not contain data from higher level programs; the system groups certain professions with others, such as medical and dental technology;

and some professions have such small numbers of program enrollees or personnel that the data are not reliable.

TABLE 23

MANPOWER PROJECTIONS FOR SELECTED ALLIED HEALTH OCCUPATIONS IN FLORIDA 1989-1994

OCCUPATION	SUPPLY[a]	DEMAND[b]	UNDERSUPPLY	OVERSUPPLY
Electroencephalographic Technician (EEG)	5	28	X	
Nuclear Medical Technology/ Radiologic Technician	11	136	X	
Surgical Technology	98	135	X	
Medical Assisting	1322	438		X
Hearing Aid Dispensing	4	0		X
Dietetic Technician/ Technology	29	44	X	
Electrocardiographic Technician (EKG)	59	87	X	
Emergency Medical Technology/Paramedic	1388	327		X
Radiation Technology	163	291	X	
Medical & Dental Technology	6	344	X	
Medical Laboratory Technology	202	204	X	
Medical Records	72	74	X	
Respiratory Therapy	350	250		X
Optical & Opthalmic Technology	91	192	X	

[a] Statewide potential supply is generally based on the annual number of program completers.

[b] Average annual openings.

SOURCE: Florida Occupational Information System, 1987.

Little data are available regarding State needs of allied health professionals with baccalaureate or higher educational preparation. One exception is a 1987 Board of Regents study showing a growing demand for physical therapists. Indicators of continued growth in the need for allied health personnel are increasing numbers of outpatient facilities, particularly private clinics, nursing homes, and private care facilities; continuing development and adoption of sophisticated health care technology; continuing trends toward specialization among health care personnel; the expanding practice of defensive medicine; and the increasing demand for health services in general. The need for adequate and timely data on the allied health professions was emphasized in the Commission's 1986 report:

> In order to more effectively adjust the supply/demand balance in the future, that is, in order to establish a basis for making accurate projections and controlling output accordingly, state policymakers must acquire and analyze data on current needs and educational outputs, and must develop a means by which to determine with some minimum level of confidence the State's future requirements for health care services.

2. Programs

In 1986, the Commission reported on the rapid growth of allied health education programs in Florida. Between 1973-74 and 1983-84, the number of programs in the State's community colleges doubled from 52 to 104; in the State University System, the number of programs increased 79 percent, from 19 to 34. The 1986-87 program inventory for the Community College System listed a total of 132 programs in over 50 allied health specialties. There were 55 programs at the baccalaureate, specialist, master's, and doctoral levels in the State University System in 21 specialty areas. Information from the Center for Career Development Services shows that 32 of Florida's area vocational-technical centers offered 79 allied health certificate programs in 1987. In addition to the offerings in the public sector, 27 programs were available through private postsecondary institutions in the State, 40 programs were housed in proprietary schools, and approximately 47 in hospital settings. In all, more than 370 allied health programs were offered in Florida in 1987.

Allied health programs in the State University System are shown in Table 24. Fifty-five programs were offered in 1987, the majority of these at the baccalaureate level. Medical technology programs were the most numerous, available at six universities, and many other programs were available at more than one institution. Sixteen master's and four doctoral degree programs were offered.

TABLE 24

ALLIED HEALTH SPECIALTY AREAS AND TYPES OF DEGREES AWARDED BY THE FLORIDA STATE UNIVERSITY SYSTEM 1987

SPECIALTY AREAS	UF	FSU	FAMU	USF	FAU	UNF	UCF	FIU	UNF
Allied Health Services	B					B			
Audiology		M		M					
		AdM D							
Clinical & Community Dietetics	B	B							
Communication Science		M							
		AdM D							
Communicative Disorders		B					B M		
Community Health Service									B
Dietetics & Nutrition		B						B M	
Health & Hospital Administration	M								
Health Administration					B				
Health Care Administration			B						
Health Occupations Education								B M	
Health Sciences							M		
Health Services Administration								B M	
Medical Records Administration			B				B	B	
Medical Technology	B	B		B	B		B	B	
Occupational Therapy	B M							B	
Physical Therapy	B		B					B	
Radiologic (Medical) Technology							B		
Respiratory Therapy			B				B		
Rehabilitation	M	B M		M					
		S D							
Speech Pathology	M	M		M					
		AdM D							

Key: B = Baccalaureate Degree M = Master's Degree AdM = Advanced Master's Degree
S = Specialist Degree D = Doctoral Degree

NOTE: Excludes medical, dental, and nursing ancillary personnel.

SOURCE: Board of Regents, 1987 and Center for Career Development Services, 1988.

Table 25 indicates accessibility to allied health programs through the Community College System. More than fifty allied health occupations are represented in the State's two-year colleges, with awards of certificates of training, technical certificates, certificates of applied science, and associate of science degrees.

Overall, allied health programs are widely dispersed in the State both by geographic region and by type of delivery system. The proliferation of programs that characterized the period between 1973 and 1983 has continued in some sectors. Nonetheless, deans and directors of allied health programs report difficulty recruiting for some programs. Comprehensive data on enrollments and degrees awarded in allied health programs across the six types of delivery systems were not available for this update, but testimony indicates that many of the same factors discussed in the introduction to this report as responsible for declining enrollments in other health professions are also negatively influencing enrollments in the allied health fields.

TABLE 25

ALLIED HEALTH SPECIALTY AREAS AND TYPES OF AWARDS GRANTED BY FLORIDA'S COMMUNITY COLLEGE SYSTEM 1987

OCCUPATION	CT	TC	CAS	AS
AH & Med Serv				1
Biomedical Engineering Technician				1
Cardiopulmonary Sciences				1
Cardiopulmonary Tech				1
Diagnostic Medical Sonography		2		1
Dietary Management	1			
Dietetic Technician/Nutrition				4
Dietetic Technology				1
Electroencephalographic Technology				1
Emergency Medicine				1
Emergency Medical Care				1
Emergency Medical Services				5
Emergency Medical Tech I	1			
Emergency Medical Technician II		1		
Emergency Medical Technology/ Technician (EMT)	6	8	1	5
Emergency Med-Tech Ambulance	2			
Emergency Med-Tech Paramedic		3	1	1
Emer Med Tech Basic		1		
Health Care Management		1		1
Health Services				1
Health Services Administration				1
Health Unit Coordinator/Ward Clerk	3			
Hospital Orderly	1			
Human Services				2
Human Services/Mental Health		1		1
Human Services Technology				1
Long Term Care Specialist			1	
Medical Assisting		2	2	2
Medical Lab Services				1
Medical Laboratory Techn/Techno				3
Medical Records Technology				3
Medical Records Transcribing/ Transcription		4	1	1
Nuclear Medicine Technology				2
Occupational Therapy Assist				1
Optometric Technician				1
Paramedic (CR)/(CT)		9		2
Paramedic Technology		1		2
Physical Therapist Assistant				3
Radiation Protection Tech				1
Radiation Therapy				1
Radiation Therapy Technology		2		1
Radiologic/Radiology Technology				11
Registered Respiratory Therapist				1
Respiratory Care Technician			1	
Respiratory Therapy		2	1	4
Respiratory Therapy Technology				2
Respiratory Therapy Tech		1		1
Rte Tech		1		1
Surgical Technician			1	
Surgical Technologist/ Technology		1		1
Vision Care Technology/Optician				1

KEY: CT = Certificate of Training TC = Technical Certificate
CAS = Certificate of Applied Science AS = Associate of Science Degree

NOTE: Excludes dental and nursing personnel.

SOURCE: State Board of Community Colleges. 1988.

3. Past Recommendations

The 1986 Allied Health Education study identified several issues and formulated a number of recommendations to address these areas. The current status of issues and recommendations are discussed below.

Allied Health Manpower - The Commission's concerns related to allied health manpower centered on the inadequacy of supply and demand data and on the maldistribution of health care practitioners in the State. The lack of demand projections has severely limited substantive manpower analyses. The Commission continues to support the work of the Office of Manpower Planning, Department of Health and Rehabilitative Services, and encourages the Office to expand its annual survey of health professionals to include licensed allied health occupations. Additionally, the Office of Manpower Planning could establish a similar schedule to conduct periodic manpower supply and demand forecasts for certain allied health professions in Florida. In order to support timely and accurate supply information, the responsibility rests on institutions and agencies at the local level to maintain this information and make it accessible to State agencies. The Commission commends the cooperation of private groups and professional organizations in providing information on allied health occupations and conducting independent surveys related to manpower areas.

The Commission was concerned also that manpower information be utilized by public education sectors in determining program needs and in conducting allied health program reviews. The governing and coordinating agencies at the State level for the public sectors have included manpower considerations in their program review processes. The State Board of Community Colleges (SBCC) now incorporates supply and demand information into their Level III program reviews. The Division of Vocational, Adult and Community Education (DVACE) also considers manpower, particularly in program reviews coordinated with the SBCC. The Board of Regents (BOR) uses the review process primarily to examine program quality. Manpower supply is considered as a component of program output and placement. Demand is an element, however, in the initial stage of new program consideration when local needs are addressed. In evaluating need for new programs and program termination, the Regional Coordinating Councils have access to technical assistance from the Postsecondary Education Policy Unit for Planning, Budgeting, and Management as well as to program review reports from the Board of Regents, the State Board of Community Colleges, and the Division of Vocational, Adult and Community Education. They also consider educational facilities information and review training responsibilities.

A recommendation was made in the 1986 Commission report to support the national allied health manpower needs project. This 18-month study requested by Congress and conducted by the Institutes of Medicine for the U.S. Department of Health and Human Services is scheduled for release in April, 1988. Preliminary information confirmed through the report's principal investigator indicates that the document focuses on the state of current knowledge and related policy concerns with recommendations to address issues in the allied health professions. Information was collected from various entities such as professional associations and state and government agencies. While this publication is expected to provide an overview of allied health

professions in the United States and a discussion of issues relevant to the professions, it is not designed to provide state-level manpower data.

Proliferation and Duplication of Program Offerings - The Commission emphasized the need for coordination in the planning and developing of allied health educational programs and recommended that representatives from the postsecondary education sectors and the Postsecondary Education Planning Commission meet regularly as a planning group to address areas of concern in allied health education in Florida. Constructive planning to avoid program proliferation and duplication is contingent on adequate data. There is a critical need for manpower supply and demand information for the allied health professions, and close coordination between the Department of Health and Rehabilitative Services and the educational sectors is central to the development of an information base useful in educational program planning. There is support among the various higher education sectors for a state-level planning group. At the institutional level, deans and directors of Florida allied health programs have been meeting semiannually since 1986 to discuss issues in their areas. The Statewide Health Council was established as a state-level comprehensive health council in an advisory capacity to the Department of Health and Rehabilitative Services, the Legislature, and the Governor on state health policy issues, state and local health planning activities, and state health regulation programs. The Commission suggests that the Statewide Health Council take a leadership position in forming a planning group to begin collaborative dialogue on health professions education. Representation should include the Board of Regents, the State Board of Community Colleges, the Division of Vocational, Adult and Community Education, Regional Coordinating Councils, the Florida Department of Health and Rehabilitative Services, the Department of Labor, and the Postsecondary Education Planning Commission.

Level and Length of Programs - Program leveling has been an ongoing concern of the Commission. In its 1984 study of Florida postsecondary vocational education, the Commission questioned the rationale for programs awarding degrees on both the certificate and A.S. level when there was little discernible difference in the position for which the training prepared. A subsequent recommendation was made that the level of degree or certificate awarded to a program be the lowest level commensurate with sound professional practices and that the expansion of certificate programs to Associate of Science programs occur only where compelling need was shown. The report further recommended that the State Board for Vocational Education develop guidelines to determine when a field of study reached a level of technical complexity making an A.S. program in a community college more suitable than a certificate program. In 1984, responding to legislative action, the State Board of Community Colleges and the Division of Vocational, Adult and Community Education identified procedures to develop guidelines for determining leveling criteria. In 1986, DVACE developed a plan for the uniform, statewide assignment of all vocational programs as to level of degree or certificate. Beginning July 1, 1988, school districts and community colleges will report all vocational postsecondary education programs according to program titles, numbers, and levels as specified in the Vocational Education Program Courses Standards document.

The program leveling process has been challenging. Yet, the combined efforts of the DVACE and the SBCC will eliminate program duplication at different award levels, as well as enhance the program review process. The process has led to more accurate definitions of functions for award levels, particularly for the certificate-to-Associate in Science levels, as well as improved student articulation. There is also need to examine program leveling at the Associate of Arts-to-baccalaureate degree levels.

Improvement in program review coordination among the BOR, SBCC, and DVACE was noted in the Commission's 1987 annual report on this issue to the State Board of Education. The SBCC and DVACE are conducting joint reviews of local programs and scheduling their statewide reviews in tandem. In the allied health fields, a coordinated review was conducted in 1987 for Emergency Medical Technicians; dental hygienists and assistants are currently being reviewed jointly. To date, no joint SBCC/BOR program reviews in the allied health programs have taken place.

Program length was an additional concern addressed in the Commission's 1986 allied health report. It was recommended that, through the program review process, institutions be identified whose allied health program length varied by more than one-half of a semester from the average of all institutions, with adjustments made where appropriate. The SBCC uses the Level I program review to gather information on program length; curriculum frameworks are being developed to determine and facilitate needed changes in program length. DVACE program leveling will also include a standard where program length is recommended. Program length was also examined in the Board of Regents' 1987 allied health program review. The consultants found that the majority of these programs in the State University System exceed 130 hours. Their report points out that this has resulted from both extension of the health portion of the program as well as an increase in general education requirements. No specific recommendations were made on program length in the consultants' report.

Accreditation of Allied Health Programs - Deans and directors of allied health programs at all levels have expressed concern with the overly prescriptive requirements issued from allied health accrediting bodies. A recommendation from the 1986 Commission report called on institutional leaders of the State's allied health programs and the State governing and coordinating boards to assume a national leadership position in the debate over the role of specialized accrediting agencies. Florida continues to support initiatives of the State Higher Education Executive Officers (SHEEO) and the Southern Regional Education Board on this issue.

Articulation in Allied Health Programs - Past recommendations on articulation of allied health programs reiterated the need for local and regional agreements. The Commission nonetheless recognized that articulation for these programs is complicated by the large number of different allied health professions, by the different awards granted, and by the various delivery systems providing education and training. Program leveling at the certificate-to-Associate in Science degree levels will continue to enhance vocational center-community college articulation for these programs through the differentiation in curricular frameworks and through improvements in program nomenclature and coding. Community college-university articulation

remains problematic for students in AS degree programs. In the 1987 Board of Regents allied health program review, the consultants pointed out, however, that State University System institutions and community colleges have progressed in developing generic agreements to facilitate transfer for AS students. The report cited the efforts of the University of North Florida and the University of Central Florida and community colleges in their areas for advances made in Associate in Science-baccalaureate degree articulation.

Minority Participation in Allied Health Education - The recruitment and retention to graduation of minorities has been of great concern to the Commission in all of the health professions education reports. The previous allied health report encouraged the implementation and monitoring of strategies made in the Master Plan Supplement, Enhancing the Participation of Minority and Disadvantaged Students in Postsecondary Education. Among the recommendations was the identification of exemplary programs in public postsecondary institutions designed to provide academic advisement and support which contribute to the retention of minority students. While a comprehensive study of such initiatives for the allied health programs has not been carried out, some successful efforts have been reported. Many colleges and universities have utilized student recruiters, mailouts, and visits to high schools to promote their programs, particularly among black and Hispanic groups. Other institutions have developed more in-depth strategies aimed at both recruitment and retention. Brevard Community College, for example, established in 1984 a program, Introduction to Allied Health for Disadvantaged Persons, with supplemental funding through the Florida Division of Vocational Education. Once the external support ceased, the college committed institutional funds to provide for program continuation. Some of the program's activities were intensive recruitment through churches and high schools, sessions for faculty and staff on cultural awareness and sensitivity, the use of guest speakers from the faculty and community to orient participants on allied health occupations and opportunities, flexible schedules to allow working participants to attend regularly, and learning support activities, not only in the basic areas of mathematics and English but also in health areas such as basic physiology, chemistry, and microbiology. This comprehensive approach to recruitment and retention helped the college increase minority enrollments from about three percent in 1984 to nine percent in 1986. Most program graduates are employed in the college's service area.

Information about educational opportunities must be accessible to students. Two recommendations from the 1986 allied health report focused on this concern. One called for the BOR, SBCC, and DVACE to convene a statewide conference to share information on recruitment and retention strategies for minority and disadvantaged students in allied health fields. To date, this recommendation has not been acted upon. A second recommendation was made that the Center for Career Development Services continue to include information for Florida about allied health education, financial aid, and job opportunities. The Center offers CHOICES, a computerized system of information on careers, financial aid, and jobs; the Student Academic Support System (SASS) for students in the State University System; and a Student On-Line Advisement and Articulation system (SOLAR) for the secondary and postsecondary sectors. CHOICES is currently available in 38 percent of Florida high schools. The Center's database lists allied health programs available in Florida's public

and private colleges and universities, vocational-technical centers, and proprietary schools.

VIII. PHARMACY EDUCATION

Traditionally, pharmacists have been considered compounders and dispensers of drugs and medicines. Rapid technological advances since the turn of the century, however, have created significant changes in the profession. As a result of their evolving patient-oriented roles, pharmacists are now involved in patient counseling, drug therapy follow-up, pharmacokinetic consultation, providing drug information to other health professionals, and prescribing. As in other states, a license to practice pharmacy is required in Florida. Awarding of licensure is contingent upon graduation from an accredited pharmacy program, successful performance on a state board examination, and completion of an internship or a specified amount of practical experience.

Pharmacy education is available in three universities in the State. Two public institutions, the University of Florida and Florida Agricultural and Mechanical University, have established colleges of pharmacy. A third program was initiated in 1987 at the Southeastern College of Pharmaceutical Sciences (SECOPS), a private institution.

1. Manpower

National trends in health manpower generally show an oversupply of health care personnel to the year 2000. Pharmacy, as most health professions, experienced growth in the 1970s as a result of considerable federal support and high college enrollments. Consequently, the number of active pharmacists in the U.S. has increased steadily since 1970. The U.S. Department of Health and Human Services projects that nationally the supply and demand for pharmacists will be in close balance at the end of the century. There are indicators, however, that the need for pharmacists is growing stronger. The American Association of Colleges of Pharmacy reported in 1986 that hospitals are hiring more pharmacists, chain drug stores are rapidly expanding, especially in the South, and industry, research, and related fields are hiring more pharmacists.

A 1986 survey by the Florida Department of Health and Rehabilitative Services reported a total of 7,413 active pharmacists, producing a pharmacist-to-population ratio of 63.8 per 100,000. The State's unusual demographic characteristics, including a large and growing elderly cohort and significant increases in the overall population, have had considerable impact on the pharmacist-to-population ratio.

The supply of new pharmacists is determined primarily by the number of new licenses granted, which in turn is influenced by the number of students graduating from the State's pharmacy programs and by the number of licenses granted by endorsement. Data from the Florida Board of Pharmacy show that the number of new licenses granted between 1981-82 and 1985-86 varied from 563 to 692 annually; this number increased to 780 in 1986-87. Except for the most recent year cited, the number of licenses granted was relatively stable. Graduation rates from the Colleges of Pharmacy at the University of Florida and Florida A & M University fluctuated between 166 and 116 annually, with 140 degrees awarded in 1985-86. The total number of graduates from Florida programs should increase, however, as graduates of the newly formed SECOPS program enter the work force. It is clear that the number of new pharmacy

licenses granted annually are awarded largely to out-of-state applicants. Data on new licenses granted, however, must be tempered by the fact that Florida leads the nation in the number of licensed pharmacists not in practice in the State. In a 1985 census by the National Association of Boards of Pharmacy, Florida had 12,923 pharmacists licensed by the State, yet 2,719 of these did not practice in State. A 1986 inventory of pharmacists estimated that, of the State's licensed pharmacists, 67 percent actively practiced in Florida.

Two reports on pharmacist manpower for Florida project an increase in the demand for pharmacy services. In a paper prepared by members of the faculty of the University of Florida College of Pharmacy, the authors projected a shortage of 103 pharmacists annually for the next ten years in the State. This was based on projected population growth and demographic patterns, a steady rate of graduates from the State's Colleges of Pharmacy, and an expected chain community pharmacy growth rate of ten percent per year. The second manpower report was prepared by Dr. Robert F. Lanzillotti for the National Association of Chain Drug Stores. He estimated a shortfall of pharmacists through the year 2000, reaching perhaps 500 or more by the end of the century.

In sum, the supply of and demand for pharmacists in Florida continues in balance, although changing demographic patterns in the State require that the manpower situation be closely monitored. As was emphasized in the Commission's 1987 report, the State pharmacist-to-population ratio is close to the national ratio, yet employers of pharmacists report shortages. This problem coupled with Florida's demographic characteristics may well require a higher ratio than is necessary in most other states.

2. Programs

Pharmacy education in Florida is a five- or six-year course of study leading to a bachelor of science degree (B.S.) or a doctor of pharmacy degree (Pharm.D.). Both are considered entry-level options and are available at the State's three Colleges of Pharmacy. The vast majority of pharmacists today hold the B.S. degree; the Pharm.D. alternative only recently became available in the State. The additional year of study required for the six-year degree is devoted to applied clinical experiential training and professional coursework.

Total Fall enrollments for the period 1981 through 1985 are contained in Table 26 for the University of Florida and Florida A & M University. Figures for SECOPS are not included as the program's charter class enrolled in 1987. The number of students enrolled in pharmacy programs varied only slightly during the five years examined. Nonetheless, increases are evident after 1983.

TABLE 26

UNDERGRADUATE ENROLLMENTS IN FLORIDA
COLLEGES OF PHARMACY
FALL 1981 TO FALL 1985

		MALE		FEMALE		BLACKS		HISPANICS	
Year	Total	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1981	606	278	45.9	328	54.1	208	32.7	60	9.9
1982	566	247	43.6	319	56.3	209	36.9	44	7.8
1983	622	258	41.5	364	58.5	238	38.3	46	7.4
1984	642	242	37.7	400	62.3	262	40.8	55	8.6
1985	689	251	36.4	438	63.6	309	44.8	50	7.3

SOURCE: Board of Regents, 1987.

Graduations from the pharmacy programs are reflected in Table 27, which shows that the number of degrees awarded annually has varied. On the average, 140 degrees were awarded annually during the five-year period. Due to the recency of the Pharm.D. option, only 22 of all pharmacy degrees granted over the five years were Pharm.D. degrees.

TABLE 27

DEGREES AWARDED BY FLORIDA COLLEGES OF PHARMACY
1981-82 TO 1985-86

Year	Total	B.S.	Pharm.D.
1981-82	166	166	--
1982-83	123	123	--
1983-84	153	151	2
1984-85	116	114	2
1985-86	140	122	18

SOURCE: HEGIS Reports, State University System, 1986.

3. Minority Participation

In Florida, the participation of women, blacks, and Hispanics in pharmacy education has been above the national average. As Table 26 shows, the proportion of total enrollments held by women increased by almost ten percent in the five years examined. With women accounting for 63.6 percent of total pharmacy enrollments in the State, men have become the minority group in this

health profession. Nationally, women made up 57.0 percent of the total enrollment in entry-level programs. The representation of blacks in enrollments also increased as they comprised 44.8 percent of all enrollees in 1985. Across the nation, 4.5 percent of total Fall 1985 enrollments were blacks. The presence of an historically black institution in the State with a pharmacy program has enhanced the participation of this minority group. Conversely, Hispanic participation decreased both numerically and proportionally between 1981 and 1985. Whereas Hispanics accounted for 3.3 percent of total Fall 1985 enrollments in all U.S. pharmacy programs, they represented 7.3 percent of enrollments in Florida.

Complete data were not available on degrees awarded to minority groups. Nonetheless, the College of Pharmacy at Florida A & M University reports that approximately 75 percent of the pharmacy degrees awarded between 1975 and 1984 were earned by minority students.

4. Past Recommendations

The Commission's study on Pharmacy Education was finished in 1987. Although little time has elapsed for action on the recommendations given, the following information represents a status report on several of those recommendations.

Pharmacy Manpower - The Commission concluded in 1987 that enrollments should not be reduced in the two State Colleges of Pharmacy. Deans of the Colleges at the University of Florida and Florida A & M University report that enrollment levels have been maintained.

Degree Options for Entry to Pharmacy Practice - Concern over the entry level issue was prominent during the course of the previous Commission study on Pharmacy Education. A resulting recommendation was to retain both the five-year baccalaureate and the six-year doctor of pharmacy degree programs in the State institutions. Both Colleges of Pharmacy have maintained the dual entry level options. A second recommendation focused on the future Board of Regents' pharmacy program review and suggested that the Board reassess pharmacy practice needs and State manpower needs in consideration of continuance of the five-year baccalaureate degree as preparation for entry-to-practice. The next review of pharmacy programs is scheduled for the 1990-91 academic year.

Access for Students to Pharmacy Education in Southeast Florida - The Commission addressed the need to strengthen access to pharmacy education for residents of Southeast Florida through a recommendation to expand Florida A & M University's presence in that area. The Dean of the College of Pharmacy at Florida A & M indicated that the College currently has an extensive program in the Miami area and is considering further expansion in Southeast Florida. The College of Pharmacy at the University of Florida projects expansion in the number of Pharm.D. students with clinical clerkships at Mt. Sinai Hospital in Miami Beach and development of additional sites in Broward and Palm Beach counties. A related recommendation to increase the number of minority physicians through development of the pharmacy-to-M.D. curriculum is also being discussed at Florida A & M.

Minority Access to Pharmacy Education - In its 1987 report, the Commission recognized the contributions of Florida A & M University and the University of Florida to enhance the participation and graduation of minority groups through commitment of staff, facilities, and funding. Since it was not clear at the time, however, that minority students were receiving adequate information on financial aid available to them, the Commission recommended that such information, as well as material on career opportunities in pharmacy, be included in the College's recruiting efforts. The Colleges report that recruiting among minorities continues to be a priority and that additional emphasis has been placed on providing appropriate and adequate information on financial resources and careers in pharmacy.

IX. VETERINARY MEDICAL EDUCATION

The scope of veterinary medical education has expanded beyond that of preparing professionals to work with farm and pet animals. The complexity of the changing agricultural economy has resulted in a greater need for veterinarians trained in disease prevention, herd management, and economics. Disciplines such as space medicine, radiobiology, laboratory animal science, and bioengineering now form part of veterinary medical services. While the majority of active veterinarians are employed primarily in private clinical practice, many work in research, government, inspection, industry, and military service.

Veterinarians must be licensed by the Florida Department of Professional Regulation to practice in the State. Licensure is contingent upon successful performance on a comprehensive national examination, among other requirements. The Florida examination generally grants practice privilege only for the State; reciprocity in veterinary medical licensure among states is very limited. Veterinary medical education leading to a Doctor of Veterinary Medicine (DVM) is offered in the State at the University of Florida, one of 27 veterinary colleges in the United States.

1. Manpower

The supply of and demand for veterinarians in Florida are roughly equivalent and are projected to continue in balance to the year 2000. Although general population growth and the increasing popularity of animal racing in the State produce greater demands for veterinary services, the supply of veterinarians is expected to keep pace with, if not surpass, projected requirements for these health professionals.

All indications based on national projections using licensing, enrollment, and completion data clearly predict a steadily rising supply of veterinarians nationally and statewide. In 1986, Florida had 4,495 licensed veterinarians. Graduates of the Florida veterinary education program provide only about 15 percent of the total supply. The supply of veterinarians in the State is also augmented by graduates of foreign schools who have passed the required examinations and by graduates of programs in other states who become licensed to practice in Florida. Data from the State Department of Professional Regulation reveal that the number of Doctor of Veterinary Medicine (DVM) licenses granted, based on national and state examination scores, nearly doubled between 1982-83 and 1985-86, from 219 to 426, decreasing slightly to 373 in 1986-87.

Although data are lacking on the utilization of veterinarian services and productivity, estimates are that approximately 60,000 veterinarians will be required nationally by the year 2000. Moderate estimates of supply forecast that 62,700 veterinarians will be practicing in the U.S. by the year 2000. Several national trends are expected to increase employment opportunities for veterinarians. Among those particularly applicable to Florida are increasing concerns about disease prevention, consumer protection, and quality food production. Such concerns become realized through federal and state regulations requiring inspection and research in food-animal sciences.

Another trend is that of expanding technological complexity and industrial development, factors which require veterinarians trained in advanced areas of scientific research and practice. Furthermore, a rapidly expanding population in Florida is associated with an increase in companion animals. Veterinarians are needed for Florida's growing racing greyhound and horse-racing industries. Private companies that employ veterinarians are expected to employ 64 to 170 percent more veterinarians by the end of the century than currently.

In sum, the supply of veterinarians in Florida is expected to be sufficient to meet growing demands, assuming most current trends continue. While requirements in certain areas of veterinary medicine may not be accelerating as rapidly as in the past, other areas such as highly specialized research in toxicology and biotechnology are expected to grow. Offsetting some of these increases will be shifts by some employing agencies from veterinarians to other professionals for technical work.

2. Programs

Florida's sole College of Veterinary Medicine is located at the University of Florida. Its students prepare for the Doctor of Veterinary Medicine degree by successfully completing three years of didactic medical sciences coursework and one year of clinical veterinary medicine, surgery, and other specialty areas. During all four years of the curriculum, students gain experience through clerkships and supervised laboratories in such areas as animal handling and treatment, laboratory work, and sick calls. Students are generally admitted to the program after earning at least an undergraduate degree.

Enrollments between 1981-82 and 1986-87 in the University of Florida College of Veterinary Medicine (UFCVM) were stable. (See Table 28) First-year openings remained at 80 annually. National first-year enrollments were 137 percent higher in the mid-eighties than in the early sixties, primarily due to steady federal and state support to schools of veterinary medicine encouraging the opening of new programs. There are indications, however, of declining numbers of applicants, resulting in an increase in the ratio of admissions to applicants.

TABLE 28

ENROLLMENTS IN THE VETERINARY MEDICINE PROGRAM UNIVERSITY OF FLORIDA BY GENDER AND RACE/ETHNICITY 1981-82 TO 1986-87

		FEMALE		BLACK		HISPANIC	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1981-82	319	137	43.0	3	0.9	7	2.2
1982-83	312	148	47.4	2	0.6	7	2.2
1983-84	316	154	48.7	4	1.3	12	3.8
1984-85	311	155	49.8	5	1.6	14	4.5
1985-86	308	162	52.6	5	1.6	15	4.9
1986-87	316	175	55.4	7	2.2	19	6.0

SOURCE: The University of Florida, 1987.

Table 29 shows increases in degrees awarded at the University of Florida program, from 76 in 1981-82 to 80 in 1985-86, peaking at 81 in 1983-84. Growth of the Florida program, which graduated 39 students from its charter class in 1980, represents a 105 percent increase. Likewise, the southern United States region is currently experiencing increases in numbers of graduating veterinarians.

TABLE 29

**DEGREES AWARDED FROM THE VETERINARY MEDICINE PROGRAM
UNIVERSITY OF FLORIDA
BY GENDER AND RACE/ETHNICITY
1981-82 TO 1986-87**

		FEMALE		BLACK		HISPANIC	
Year	Total	Number	Percent	Number	Percent	Number	Percent
1981-82	76	24	31.6	1	1.3	2	2.6
1982-83	76	33	43.4	1	1.3	0	0.0
1983-84	81	39	48.2	0	0.0	2	2.5
1984-85	76	36	47.4	1	1.3	2	2.6
1985-86	80	39	48.8	0	0	3	3.8

SOURCE: The University of Florida, 1987.

3. Minority Participation

Although total enrollment in the College of Veterinary Medicine fluctuated little over the the six years examined, the participation of females, blacks, and Hispanics increased both numerically and proportionally. These advances resulted, in large part, from a concerted effort by the College in recent years to actively recruit and retain minorities. As illustrated in Table 28, female participation increased from 43 percent of total enrollment at the College in 1981-82 to 55.4 percent in 1986-87. Forty-nine percent of all veterinary students in the U.S. in 1984 were women, compared with less than 10 percent in 1970. Participation of blacks in veterinary medical programs remained relatively low both in-state and nationwide. In Florida, blacks represented 2.2 percent of total enrollments in 1986-87, slightly behind the national average of approximately 2.5 percent. Hispanic representation in the veterinary medicine program increased more in Florida than nationally, with a change at the UFCVM from 2.2 percent in 1981-82 to 6.0 percent in 1986-87. Hispanics accounted for only 1.6 percent of total enrollments across the country in the mid-eighties.

Table 29 indicates slower increases for minorities in completing the CVM program. Women graduated in larger numbers annually most years between 1981-82 and 1985-86, increasing from 31.6 percent to 48.8 percent of total completions. Neither blacks nor Hispanics graduated from the Florida program in increasing numbers.

4. Past Recommendations

The Commission's previous report on Veterinary Medical Education was published in 1987. Consequently, the update on recommendations related to that report reflects efforts developed within a short time to address these concerns.

Veterinary Manpower - The Commission recommended that both the number of veterinary schools and enrollment at the existing College of Veterinary Medicine be maintained. No new DVM programs are being planned for the State. Also, the enrollment level of 80 students in the entering class at UFCVM has not changed.

Veterinary Medical Education - Space and resource shortages at the College of Veterinary Medicine were of concern in the 1987 Commission report. The College is confronting three problems related to space: The quality of 60 percent of the academic and clinical space is severely affected by ventilation problems; the equine hospital does not have enough capacity; and there is insufficient space for current academic programs and faculty. Funding in the 1987-88 academic year was allocated to begin working on the ventilation problem and an additional appropriation has been requested for 1988-89. About 180 or 36 percent of faculty, staff and residents are currently housed in temporary buildings near the College while the ventilation system is under repair. The University is also developing solutions for space needs at the equine hospital and within the academic setting to regain full accreditation. In addition, the College is exploring other options to supplement funding to correct these problems. The severity of the space and ventilation problems has resulted in the program being placed on limited accreditation by the American Veterinary Medical Association in March 1987. This, in turn, may have repercussions on the number of program applicants, on faculty turnover, and on the program's reputation in the future.

Another recommendation related to veterinary medical education suggested that the College strengthen efforts to track its graduates and record the type of animal practice in which they are employed. The College has initiated activities in both areas. An ongoing project is underway with the alumni association to update students' addresses. Also, the College is utilizing resources at the American Veterinary Medical Association to ascertain practice areas of Florida veterinarians.

In the 1987 report, Commission recommendations also focused on accessibility to veterinary medicine career information. It was recommended that information on the College's Post-Baccalaureate Training Program be included in the CHOICES system maintained by the Center for Career Development Services. The program is now listed in CHOICES under Veterinary Medicine Professional Degree. A recommendation was also made that the University of South Florida include information on the Veterinary Medicine program in its annual statewide graduate opportunities conference for minority students. The College of Veterinary Medicine, along with other graduate programs, has been represented at the Conference, and a College representative has initiated visits to the USF pre-vet club. The College also reports that it is now among the top programs nationally in enrollment of black students and second in the nation in the number of Hispanics enrolled. In a related recommendation, it was suggested that the Board of Regents review the usage of SUS grant-in-aid

monies to assure that the needs of minority veterinary students are being met adequately. In 1987, an SUS Office of Equal Opportunity Programs report revealed that 121 fellowships had been awarded to black students in first professional programs between 1979-80 and 1987-88. Of these, 16 awards or approximately 14 percent had been granted to veterinary medical students. This was about equal to the percentage of pharmacy students receiving the fellowships, but less than law students, who received 20 percent, and medical students, who received 45 percent. A total of 437 awards were made to blacks in first professional and graduate programs over the nine-year period.

Veterinary Technology Education - St. Petersburg Junior College offers a two-year program in veterinary technology. Under the supervision of a veterinarian, graduates of this program work as technicians to assist veterinarians to protect animal health, relieve animal suffering, conserve livestock resources, promote public health, and advance medical knowledge. Veterinary technicians may not diagnose, prescribe, perform surgery, or conduct activities prohibited by the Florida veterinary practice act. While veterinary technology is not a pre-vet program, some of the technician courses are transferable into the required pre-vet curriculum. Approximately 200 technicians are currently employed in Florida, with about one in ten veterinarians employing a veterinary technician. The program director at St. Petersburg Junior College reports that the demand in Florida for technicians remains high.

In order to promote dissemination of information on program availability, a recommendation from the 1987 study was the inclusion of the Veterinary Technology Program in Florida CHOICES and VIEW programs as well as in all published inventories. Program information has since been added under the title Animal Caretaker. Also in an attempt to enhance program visibility, the Commission suggested that the College pursue with the State Board of Community Colleges designation as a Center of Excellence. No action has been taken at the State Board of Community Colleges on this recommendation.

Graduates of Foreign Veterinary Schools - In its previous study, the Commission supported efforts by the Department of Professional Regulation to modify the Florida licensure process to require all foreign veterinary school graduates to obtain an Education Commission for Foreign Veterinary Graduates (E.C.F.V.G.) certificate prior to sitting for the State licensure examination. At present, regulations governing this process continue to require the E.C.F.V.G. certificate only after an applicant has taken and failed the examination three times.

X. ISSUES AND RECOMMENDATIONS

In response to proviso language in the 1987 General Appropriations Act, specific Appropriation 537, the Postsecondary Education Planning Commission reviewed the status of all health professions education programs included in the Comprehensive Health Professions Education Plan. Those health professions programs examined include Nursing (1983), Public Health (1983), Dentistry (1984), Chiropractic Education (1984), Medical Education (1985), Allied Health (1986), Pharmacy (1987) and Veterinary Medicine (1987). As stipulated in the proviso language, current information is provided on enrollment and graduate levels, a review of market place demand for graduates, as well as an analysis of new policy issues and the disposition of former recommendations.

Education for health professions in Florida must be viewed within the context of a highly dynamic and complex health care industry. Health education is multifaceted and complicated by such concerns as emerging oversupplies of some health professionals and undersupplies of others, a growing cohort of elderly individuals in the general population, increasing numbers of HMO insurance plans, restructured health insurance benefits, new technologies, cost containment, a more limited federal role, and concern over transmission of diseases, specifically AIDS. Changes occurring in the health care industry nationally are often magnified by the unique demographic characteristics of the State. Florida's diverse and rapidly growing population presents a tremendous challenge to the State's health care industry, educators of health professionals, and health care policy makers. The following sections focus individually on a number of ongoing and emerging issues related to education for the health professions.

A. Health Professions Manpower

When examined across the eight major categories of health professions education areas, the current overall manpower situation is best described as in balance. This generality, however, masks specific manpower strengths and weaknesses in individual programs. Manpower supply and demand information indicates that current and projected State needs can adequately be met for dentists, chiropractors, physicians (with the exception of some specialty areas), pharmacists, and veterinarians. Data suggest that the manpower situation for most public and allied health occupations is in tenuous balance, but large increases in demand are projected for services rendered by these health professionals. This scenario, coupled with uneven supplies of graduates for some of these occupations, suggests that public and allied health occupational areas will have difficulty meeting future needs. Finally, the State is experiencing a severe undersupply of registered nurses--a situation that is expected to worsen by the turn of the century if the supply of RNs does not increase appreciably. The demand for most health care services in Florida will continue to escalate, accompanied by special needs of population subgroups. While projections indicate that some health professions education programs will produce sufficient numbers of graduates to meet demand over the next ten years, for other professions, supply is just meeting demand. The future, then, will find the State with a deficit situation where the demand for services cannot be adequately met.

Any discussion of Florida manpower for the health professions is restricted by inadequate manpower information. Major limitations exist in the quality and quantity of Florida health manpower data. Individual manpower supply and demand analyses in the previous chapters show the unevenness of information, particularly for current demand and projections of both supply and demand. Some of the manpower information utilized here is based on documentation; other reports rely on expert opinion and perceptions. Periodic reports issued by the U.S. Department of Health and Human Services provide general manpower supply and demand for the nation. While this is useful in examining larger trends for the health professions individually and collectively, rarely does the report disaggregate the data for state-level analysis. The Office of Health Manpower Planning, Florida Department of Health and Rehabilitative Services, has conducted surveys of selected Florida licensed health professionals during recent years. Subsequent reports on pharmacists, nurses, dentists, allopathic and osteopathic physicians, and chiropractors have been very useful in describing these health professionals, especially in terms of demographics, employment, and education. The Department of HRS received supplemental funding from the 1983 Legislature to develop five, ten, and twenty year health manpower supply and demand forecasts for the State, and for each major market area within the State. The University of Florida Center for Health Policy Research also prepared supply and demand forecasts for four health professions with a grant from HRS. These data have significantly contributed to the knowledge base on health manpower, yet the larger problem of inadequate information persists.

There is critical need for a comprehensive manpower data base which incorporates, at a minimum, regular surveys of all of the health professions studied in this report. Additionally, the State, through the Department of Health and Rehabilitative Services, should give priority to conducting ongoing manpower supply and demand projections for these health professions individually, on a rotating basis, so that approximately every five years revised projections are produced. As the designated state-level advisory group on health policy issues, the Statewide Health Council should assist in bringing together representatives from education, government, and industry to discuss issues related to labor market needs and to coordinate efforts towards helping the educational sectors respond to State needs for the health professions. Substantive planning for health professions education by the State's postsecondary education institutions and governing and coordinating boards is dependent on the availability of accurate, complete, and timely data on both current and projected Florida health manpower needs.

Recommendations:

1. **The State, through Department of Health and Rehabilitative Services, should support ongoing labor market supply and demand projections for all major health professions.**

2. **The Statewide Health Council should coordinate a statewide planning group with representation from education, government, and industry to discuss labor market issues relating to the health professions and to assist educational sectors in responding to State needs for these professions.**

B. Health Professions Education Programs

While the tremendous diversity in the professions reviewed precludes any detailed discussion at this point of individual health professions, program commonalities can be identified. As the previous chapters illustrate, educational preparation for the eight health professions is generally accessible, both geographically and economically. Programs within each of the professions tend to be located in both rural and urban areas and are often available in both public and private postsecondary institutions. State tuition subsidies for Florida residents in private institutions exist for some programs to enhance access. Also, many programs have established extension and outreach activities to further increase accessibility. With the exception of chiropractic education, students may select, where appropriate for each profession, programs at certificate, associate degree, baccalaureate degree, and master's degree levels. Doctoral degree preparation is available for many health professions.

The status of annual program enrollments and degrees awarded is generally stable. In dentistry, some allied health and public health programs, the number of qualified applicants exceeds the space available, producing a favorable applicant-to-enrollee ratio for the institution. In other cases, programs are experiencing a decline in applications and a reduction in the number of qualified students. At some institutions, programs in nursing, dental hygiene, and allied health fields such as medical laboratory technology are in enrollment declines. Data on program completions indicate that the number of degrees awarded annually in most of the health professions remained constant during the first half of this decade. A notable upsurge occurred, however, in the number of graduate degrees in nursing and public health degrees awarded, while a decline was evident in the number of undergraduate nursing degrees granted.

The condition of annual stable-to-declining enrollments and degrees awarded that currently characterizes most of the eight health professions is of particular concern to the Commission as enrollments and degrees granted directly affect manpower supply. Most health program deans and directors report increased efforts to attract and retain students in health professions education through such initiatives as orientation activities with middle and high school counselors and students, career day activities, summer enrichment programs on the campuses, media promotions, financial aid, mentoring and peer support programs, and involvement of practitioners. In view of increased concern over communicable diseases such as AIDS, attention needs to be given to the education of practitioners and prospective students on the very low risks of transmission of these diseases in health work. In response to the overall need to increase the number of some health professionals in the State, the Florida Hospital Association, with technical assistance from the Center for Career Development, Department of Education, will sponsor a recruitment conference patterned after the highly successful teacher recruitment conference. The three-day activity is scheduled for early summer and will focus on many health professions occupations, with emphasis on nursing.

Recommendation:

3. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should continue to carefully monitor enrollments and degree completions in health professions education programs. Program quality must be maintained while providing sufficient numbers of graduates to meet the State's future health personnel needs.**

C. Minority Participation in Health Professions Education

For purposes of this report, the issue of minority participation focuses on enrollment and graduation rates of males, females, blacks and Hispanics. Representation by gender is concerned with the traditional male/female distribution among enrollees and graduates. Whereas females have registered significant gains in participation in traditionally male-dominated professions, the representation of males in traditionally female-dominated professions has not increased appreciably. In 1980, the State's population was composed of 85.4 percent whites, 13.8 percent blacks, and 8.8 percent Spanish origin individuals. In few of the health professions programs studied for this report were blacks and Hispanics represented at the level they have been in the general population. Additionally, the participation rates of blacks have declined in most health professions programs. The participation rates of Hispanics generally increased slightly.

Many of the health professions have traditionally been characterized as predominantly male or female. With the growth in numbers of women attending colleges and universities and a corresponding expansion into other disciplines, the gender mix in most professions has changed radically in the years since World War II. Among the health professions education programs in Florida, women represent over 50 percent of enrollments in nursing, public health, pharmacy, veterinary medicine and some allied health fields. Their representation in medicine and dentistry is steadily increasing and is projected to reach 50 percent in dentistry by the turn of the century. In the not too distant future, men may be the minority gender in most health professions education programs. Most recently, women have earned approximately 20 percent of the degrees awarded in dentistry, about 25 percent of those in allopathic medicine, and 49 percent of the Doctor of Veterinary Medicine degrees granted. At present, males account for approximately seven percent of enrollments and degree completions in Florida registered nursing programs. In public health programs, males represent about 30 percent of enrollments and have garnered about 36 percent of the master's degrees granted in the last five years.

Health professions programs have actively engaged in recruiting and retention initiatives to increase the participation of blacks in their areas. Yet, enrollment and degree completion figures indicate that they represent far less than 13 percent of entering and graduating classes in most health professions. The exception to this is pharmacy, where the high percentage of blacks, approximately 45 percent, reflects the large number of blacks in the program at Florida A & M University. In public health programs, particularly through those at Florida International University and the University of Miami, blacks received 13 percent of all master's degrees awarded over a recent five-year

period. Blacks represent less than ten percent of enrollments and degrees awarded in nursing, dentistry, medicine, and veterinary medicine. Not only is black representation very low, it has been decreasing in some health professions over the last ten years.

In comparison with blacks, the difference between Hispanics' representation in health professions programs and in the general population is less. For example, Hispanics represent about eight percent of total enrollments in medicine and pharmacy. In nursing, public health, and veterinary medicine, they have accounted for eight percent or less of enrollments. Hispanics in dentistry made up almost 19 percent of enrollments in 1986-87, an increase of 150 percent in six years. With the exception of dentistry, Hispanics have received less than ten percent of the degrees awarded in other health professions programs. Unlike blacks, however, Hispanics have increasingly entered and successfully completed allopathic medicine, veterinary medicine, and pharmacy.

In other reports, the Commission has examined in detail the progression of minorities in Florida postsecondary education. The Commission's Master Plan for Florida Postsecondary Education: 1988 Update reports that enrollment levels in public higher education for blacks in Florida have declined since the latter part of the 1970s, with the declines occurring primarily in the community college sector. Recommendations in the update call for increased support for initiatives designed to enhance the participation, retention, and completion of underrepresented groups, particularly racial/ethnic minorities. The enrollment and completion data reviewed for the Comprehensive Health Professions Education Plan accentuate the need to reinforce efforts to increase minority participation in all health professions programs. Cooperative inter-institutional programs provide alternatives to increase participation. In addition to the issue of equity, the importance of increasing minority participation relates to the need to improve the health of minority citizens as well as of rural and inner city residents. The incidence of disease is higher among minority groups, the poor, and rural residents than it is in the general population.

Recommendation:

4. **The State should continue to support initiatives to enhance minority participation in health professions education. Governing and coordinating boards for public postsecondary education should carefully monitor these recruitment and retention programs to assess their effects on the progress of racial/ethnic minorities from enrollment to graduation.**

D. Geriatrics in Health Professions Education

The growing cohort of individuals 65 years of age and over in Florida is a major issue in health professions education. The median age of Florida's population was 34.7 years in 1985, compared with the national median of 30 years. Also in 1985, persons 65 and older accounted for 18.5 percent of the State's population; this is expected to increase to 20.6 percent by the turn of the century. The elderly are the heaviest users of health services. They use more than 25 percent of all prescribed drugs. A report prepared by the

U.S. Senate Special Committee on Aging (1985) indicated that the elderly accounted for 29 percent of all hospital discharges and one-third of the country's personal health care expenditures, even though they constituted only 11 percent of the population. The report also stated that federal spending on the elderly had nearly doubled since 1960.

A number of past recommendations within individual health professions studies focused on the inclusion of geriatrics in the curricula. Interviews with deans and directors of programs in nursing, medicine, public health, dentistry, pharmacy, and allied health confirmed that geriatrics has been incorporated into the curricula of these programs through both theory and practice. The issue of special needs of the elderly are addressed through specific, separate courses as well as through discussions in a variety of courses. Clinical requirements for most health professions programs incorporate experience with elderly patients in diverse health care settings. In addition, graduate programs in medicine, dentistry, and pharmacy conduct geriatric research. In sum, it appears that geriatrics has become an integral part of health professions education; however, the breadth and depth of the geriatric component varies across and within the professions.

Recommendation:

5. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should use the program review process to identify how and to what extent geriatrics is integrated into the health professions curricula in public postsecondary institutions in order to determine if students are receiving adequate exposure to the health needs of the elderly.**

E. Cost Containment in Health Professions Education

The issue of cost containment in health professions education has two aspects. One is the cost of providing health professions programs in the institution; the other is the inclusion of cost containment concepts in the curriculum.

The cost to the institution of providing health professions programs is high as they are expensive to initiate and maintain. Rapidly evolving technology in the health professions further exacerbates program costs. Since 1980, the elimination of capitation grants and institutional assistance as well as sharp reductions in National Health Service Corps grants have significantly reduced total federal spending for health professions education. Consequently, postsecondary institutions have become increasingly reliant on income generated through patient-care services and student tuition. Concurrently, students find health professions less attractive as a large portion of the financial burden shifts onto them. Concern over program costs has led most institutions to reexamine their offerings and options. The very successful joint Master's in Public Health program between Florida International University and the University of Miami may serve as a model for other health professions programs as a cost effective alternative.

Cost containment is also a necessary element in health education curricula. Indicators of spiraling health care costs in the United States include the

rapid increase of health care costs over the consumer price index; the increase of insurance costs over any other health care item; and rising hospital and room rates as well as physician fees. At the same time, efforts are needed to avoid erosion in the quality of health care in the name of cost containment. Since health professionals at many levels and in various fields influence health care costs, the inclusion of information on cost containment issues in the curricula should contribute to the avoidance of unnecessary costs while maintaining quality services.

Recommendation:

6. **Institutions should explore the feasibility of developing joint programs in health professions education, particularly at the graduate level, as a cost containment strategy to confront enrollment declines and maintain program accessibility.**

7. **The Board of Regents, State Board of Community Colleges, and Division of Vocational, Adult, and Community Education should use the program review process to determine the extent to which cost containment is incorporated into the health professions curricula and to assess the adequacy of this coverage.**

F. Summary

In carrying out the Legislative charge to review and update previous reports on health professions education in Florida postsecondary institutions, the Commission examined individual programs, manpower supply and demand, former recommendations, and emerging issues for Nursing, Public Health, Dentistry, Chiropractic Education, Medical Education, Allied Health, Pharmacy and Veterinary Medicine. In this concluding chapter, five major issues were discussed for the health professions collectively. While there are a number of other issues relevant to health professions education in the State, concerns with manpower, programs, minority participation, geriatrics, and cost containment are of particular import to the State. It is the Commission's belief that the citizens of Florida are well served in health professions education programs in regards to access and quality. Florida colleges and universities have made a good faith effort to address concerns raised in earlier studies on the eight professions. As a result of the Commission's attention to these and related issues, there are assurances from educators, administrators, industry, and government of continued dialogue and collaboration to develop appropriate policy guidelines for health professions education.